

State of Wisconsin

2004

Point Beach - Kewaunee

Environmental Radioactivity Survey

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State of Wisconsin DHFS

2004

Point Beach - Kewaunee Environmental Radioactivity Survey

Introduction

Wisconsin Public Health Statues 254.41 mandates the Department of Health and Family Services to conduct environmental radiation monitoring around the nuclear power facilities that impact Wisconsin. This environmental monitoring report is for the Point Beach and Kewaunee nuclear generating plants for the calendar year January - December, 2004 and provides a description and results of this environmental monitoring program.

WI DHFS Point Beach - Kewaunee Environmental Monitoring Sampling Program

The WI DHFS environmental monitoring program consists of the collection of various types of samples from the air, water and terrestrial exposure pathways. The sampling program included samples of air, precipitation, ambient gamma radiation (TLD), surface water, fish, shoreline sediment, soil, milk, well water and vegetation that are collected from selected locations at planned sampling intervals.

Table 1 provides a listing of types of samples collected, collection frequency, sites where samples are collected, the number of samples collected, number of samples that were missed or had sample or analysis deviations and a listing of the required analyses. Table 2 is a listing of sampling sites and includes a description, direction and distance from the monitored power plants. Table 3 provides an explanation of missing samples or non-routine sample analyses. Figure 1 is a map showing the location of environmental sampling sites in relation to the Kewaunee plant and Figure 2 is a map showing the location of environmental sampling sites in relation to the Point Beach plant.

Program Modifications

There were no program modifications for 2004.

Laboratory Services and Quality Assurance

The analysis of the samples is performed under contract with the State Laboratory of Hygiene (SLH). SLH maintains their own quality assurance program. Analytical procedures provide for routine replicate analyses to verify methods and instrument operation. Traceable sources are used to regularly calibrate the counters and daily performance checks are made between calibrations. In addition, quality control charts are maintained on the counters.

SLH participates in the Environmental Resource Associates' Proficiency Testing program and has performed satisfactorily over the report period. Proficiency testing results are available from the State Laboratory of Hygiene.

Detection Limits

Detection limits, required by WI DHFS, will be expressed as a lower limit of detection (LLD). The required WI DHFS LLD as indicated in Table 4 under the heading "LLD" is an "a priori" estimate of the

capability for detecting an activity concentration by a given measurement system, procedure, and type of sample. Counting statistics of the appropriate instrument background are used to compute the LLD for each specific analysis. Using 4.66 times the standard deviation (s_b) of the instrument background, the LLD for each specific analysis is defined at the 95% Confidence Level.

The LLD for each radioisotope listed in Table 4 has been calculated from the following equation:

$$\text{LLD} = \frac{4.66 s_b}{E * V * 2.22 * Y * S * \exp(-dt)}$$

Where:

- LLD is the "a priori" lower limit of detection as defined above, as picocuries per unit mass or volume,
 s_b is the standard deviation of the background counting rate or of the counting rate of blank sample as appropriate, as counts per minute,
E is the counting efficiency, as counts per disintegration,
V is the sample size in units of mass or volume,
2.22 is the number of disintegrations per minute per picocurie,
Y is the fractional radiochemical yield, when applicable,
S is the self-absorption correction factor,
d is the radioactive decay constant for the particular radionuclide, and
t for environmental samples is the elapsed time between sample collection, or end of the sample collection period, and time of counting.

Typical values for E, V, Y and dt have been used to calculate the LLD.

Reporting of Sample Analysis Results

Results for specific analyses will be reported as either a "less than" (<) value or an actual activity value. The reporting of results in Table 4 under the heading "Range" and in Tables 5-15 are "a posteriori" calculations based on the actual analysis performed using the actual sample values for E, V, Y and dt. Typically the reported "less than" (<) results are lower than the required WI DHFS LLD indicating that the required WI DHFS LLD has been met.

In late March and early April, SLH was in the process of upgrading from one software vendor to another for the qualitative and quantitative analysis of environmental samples. As a result, some reported "less than" numbers for some analyses did not meet the required WI DHFS LLD. These reporting deviations have been indicated in Table 3.

An actual activity value will be accompanied by an uncertainty term for that analysis. The uncertainty term is a plus or minus counting uncertainty term at the 2 sigma (95%) confidence interval and is printed as (+- or \pm). Examples and explanations of data reporting are:

<u>Example</u>	<u>Nuclide</u>	<u>Activity reported</u>
1	^{137}Cs	< 10 pCi/liter
2	^{137}Cs	15 ± 3 pCi/liter

In example 1 we can be 95% confident that the sample activity, if any, is less than the MDC of 10 pCi/liter. In example 2 we can be 95% confident that the actual sample activity is greater than the MDC for that analysis and is between 12 and 18 pCi/liter.

Table 1. Sample collection summary and required analyses for 2004.

Sample Type	Collection and Frequency	Site locations	Number of Samples Collected	Number of Sample Deviations	Required Analyses
Air Particulate	C/W	1, 4, 7, 8, 17, 18	311	3	GA, GB, GI
Air Iodine	C/W	4, 17, 18	156	2	GI
Precipitation	C/BW	1, 4	12	0	GB, H
TLD	G/Q	T1 – T31	124	3	ambient gamma
Surface Water	G/M	9, 12a, 17	35	2	GA, GB, GI, Sr, H, I
Surface Water	G/SA	5, 25	4	0	GA, GB, GI, Sr, H
Fish	G/SA	10	12	0	GI
Shoreline Sediment	G/A	5, 10a, 12a, 12b, 12c, 25, 26	7	0	GA, BG, GI
Vegetation	G/SA	1, 2, 3, 4, 5, 7, 8, 14, 17, 25	20	1	GA, GB, GI
Soil	G/SA	1, 2, 3, 4, 5, 7, 8, 14, 17, 25	20	1	GA, GB, GI
Well Water	G/SA	3, 10b, 11, 12d	10	0	GA, GB, H
Milk	G/M	19, 24, 27	36	3	GI, I, Sr

Collection type: C/ = continuous; G/ = grab

Frequency: /W = weekly; /M = monthly; /Q = quarterly; /A = annually; /BW = bi-weekly; /SA = semi-annually

Required analyses: GA = gross alpha; GB = gross beta; GI = gamma isotopic; Sr = strontium; I = iodine; H = tritium

Table 2. WI DHFS Point Beach - Kewaunee environmental monitoring sampling sites.

Sample site	Distance and direction (miles)		Location description
	Kewaunee	Point Beach	
PBK-1	5.7 WSW	5.7 WNW	Francar residence
PBK-2	4.9 S	0.7 SSW	Southwest corner property line - Point Beach
PBK-3	4.3 SSW	1.5 W	Two Creeks Town Hall
PBK-4	3.1 S	1.2 NNW	Residence north property line - Point Beach
PBK-5	2.6 S	1.7 NNW	Two Creeks Park
PBK-6	9.2 S	5.1 SSE	Coast Guard station (discontinued August, 2002)
PBK-7	7.3 SSW	3.3 SSW	WPSC substation, Cty V
PBK-8	0.8 WNW	4.9 N	P Ihlenfeldt farm
PBK-9	4.7 S	0.5 SSE	Point Beach, meteorological tower
PBK-10a	4.2 S	0.1 E	Point Beach, effluent channel
PBK-10b	4.2 S	0.1 E	Point Beach, entrance
PBK-11	3.1 SSW	2.0 NW	Two Creeks International Harvester
PBK-12a	0.1 E	4.2 N	Kewaunee, effluent channel
PBK-12b	0.1 E	4.2 N	Kewaunee, effluent channel, 500 feet N
PBK-12c	0.1 E	4.2 N	Kewaunee, effluent channel, 500 feet S
PBK-12d	0.1 W	4.2 N	Kewaunee, well sites
PBK-14	0.8 W	4.3 N	Trailer on Nuclear Road

Table 2. WI DHFS Point Beach - Kewaunee environmental monitoring sampling sites.

Sample site	Distance and direction (miles)		Location description
	Kewaunee	Point Beach	
PBK-15	1.7 SW	3.5 NNW	Jct of Cty BB and Woodside Road (discontinued July, 1996)
PBK-16	3.9 W	6.0 NW	Bruechert residence (discontinued July, 1996)
PBK-17	11.4 NNE	15.6 N	Green Bay Pumping Station - Rostok
PBK-18	0.1 S	4.1 N	Kewaunee, meteorological tower
PBK-19	6.2 SW	3.8 W	W. Funk farm
PBK-20	3.2 SSW	2.2 NW	L. Engelbrecht farm (discontinued in September, 2003)
PBK-21	3.0 N	7.3 N	D. Stangel farm (left the dairy business in October, 1999)
PBK-22	10.4 SSW	6.7 SW	Bertler's food stand (discontinued in July, 1998)
PBK-23	4.0 WNW	6.4 NW	Jansky farm (discontinued in July, 1998)
PBK-24	2.6 N	6.9 N	L. Struck farm
PBK-25	7.4 S	3.2 SSE	Manitowoc Public School District Property
PBK-26	8.3 NNE	12.6 N	Kewaunee
PBK-27	3.5 SSW	1.7 NW	R. Barta farm
PBK-(T1-T8)	4.0 S	0.6 NW	Point Beach ISFSI on outside of perimeter fence
PBK-T9	3.2 S	1.2 NNW	Point Beach north property line, Lakeshore Road
PBK-T10	5.1 S	0.8 SSE	Nuclear Road, 0.6 mile E of Lakeshore Road
PBK-T11	5.1 S	0.9 SSW	Nuclear Road, 0.1 mile E of Lakeshore Road
PBK-T12	5.0 SSW	1.4 WSW	Highway 42, 0.6 mile N of Nuclear Road
PBK-T13	4.0 SSW	1.4 WNW	Highway 42, 0.3 mile N of Tapawingo Road
PBK-T14	3.1 SSW	1.9 NW	Two Creeks Road, 0.1 mile E of Highway 42
PBK-T15	7.6 S	3.3 S	Junction of Lakeshore Road and Ravine Drive
PBK-T16	7.3 SSW	3.3 SW	Cty V, 0.5 mile W of Hwy 42
PBK-T17	5.6 SW	3.8 W	Junction of Saxonbury Road and Tapawingo Road
PBK-T18	3.2 SW	3.3 NW	Zander Road, 0.1 mile W on Tannery Road
PBK-T19	0.7 N	5.0 N	Junction of Sandy Bay Road and Lakeview Road
PBK-T20	1.4 SW	3.4 NNW	Junction of Cty BB and Ratajcsak Lane
PBK-T21	1.3 W	4.5 NNW	Junction of Nuclear Road and Woodside Road
PBK-T22	1.2 NW	5.3 N	Sandy Bay Road, 0.4 mile W of Hwy 42
PBK-T23	4.9 WSW	5.5 NW	Cty B, S of Tisch Mills
PBK-T24	3.8 NW	7.0 NNW	Jct of Norman Road and Cty G
PBK-T25	3.1 NNW	7.2 N	Woodside Road, 0.2 miles S of Old Settlers Road
PBK-T26	3.0 N	7.3 N	Old Settlers Road, 0.1 mile W of Cemetery Road
PBK-T27	17.4 NNE	21.6 NNE	Algoma, S on Hwy 42
PBK-T28	7.2 NNE	11.4 N	Kewaunee, S on Hwy 42
PBK-T29	12.4 S	8.1 SSW	Two Rivers, junction of Hwy 42 and 34th Avenue
PBK-T30	16.0 SSW	11.9 SSW	Manitowoc, Hwy 42, Two Rivers Chamber of Commerce
PBK-T31	8.6 SW	5.6 WSW	Mishicot, Cty V, in front of house #653

Table 3. Missing sample or sample deviation report for 2004.

Sample type	Date	Site	Explanation
Air Particulate	09/16/04	7	No gross beta data was available. Air sampler was inadvertently not turned on during the indicated time period.
Air Particulate	09/23/04	7	No gross beta data was available. During sample exchange, the wind blew the air filter and it could not be retrieved.
Air Particulate	02/13/04	17	Due to an electrical problem, the air site was off for approximately 4 days and 3 hours during the indicated collection period.
Air Iodine	02/13/04	17	Due to an electrical problem, the air site was off for approximately 4 days and 3 hours during the indicated collection period.
Air Iodine	07/30/04	17	No air iodine results were available. The cartridge sample was inadvertently lost.
TLD	1st quarter	T-9	For the 1st quarter, the TLD and cage were found lying on the ground.
TLD	3rd quarter	T-23	For the 3rd quarter, the TLD and cage were found lying on the ground.
TLD	4th quarter	T-19	For the 4th quarter, the TLD and cage were found lying on the ground.
Surface Water	February	9	No data was available. Due to safety concerns a surface water sample was not collected.
Surface Water	03/23/04	9	No data was available. A gamma isotopic analysis was not performed on the sample.
Air Gamma Isotopic	1st quarter	all sites	In late March and early April, SLH was in the process of upgrading from one software vendor to another for the qualitative and quantitative analysis of environmental samples. As a result some of the reported "less than" numbers for some analyses did not meet the required WI DHFS LLD.
Vegetation	06/08/04	17	The gamma isotopic analysis was performed late and did not meet the required WI DHFS LLD for I-131.
Soil	06/07/04	14	The gamma isotopic analysis was performed late and did not meet the required WI DHFS LLD for Nb-95.
Milk	8 samples	19, 24 & 27	The required WI DHFS LLD for the chemical separation of I-131 was not met.
Milk	04/07/04	19	The required gamma isotopic WI DHFS LLD for I-131 was not met.
Milk	04/07/04	24	The required gamma isotopic WI DHFS LLD for La-140 was not met.

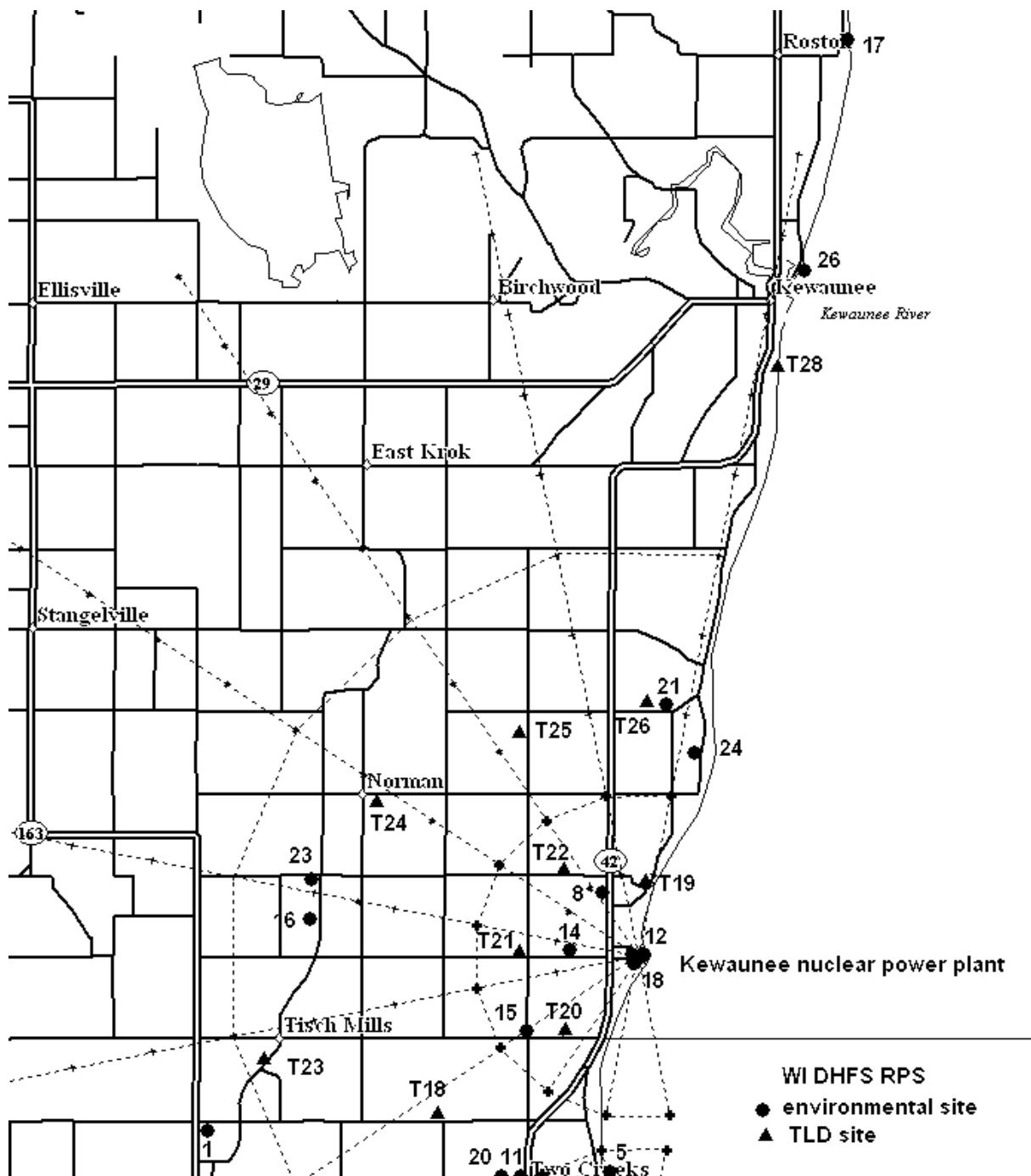


Figure 1. Point Beach - Kewaunee environmental monitoring sampling sites in relation to the Kewaunee plant.

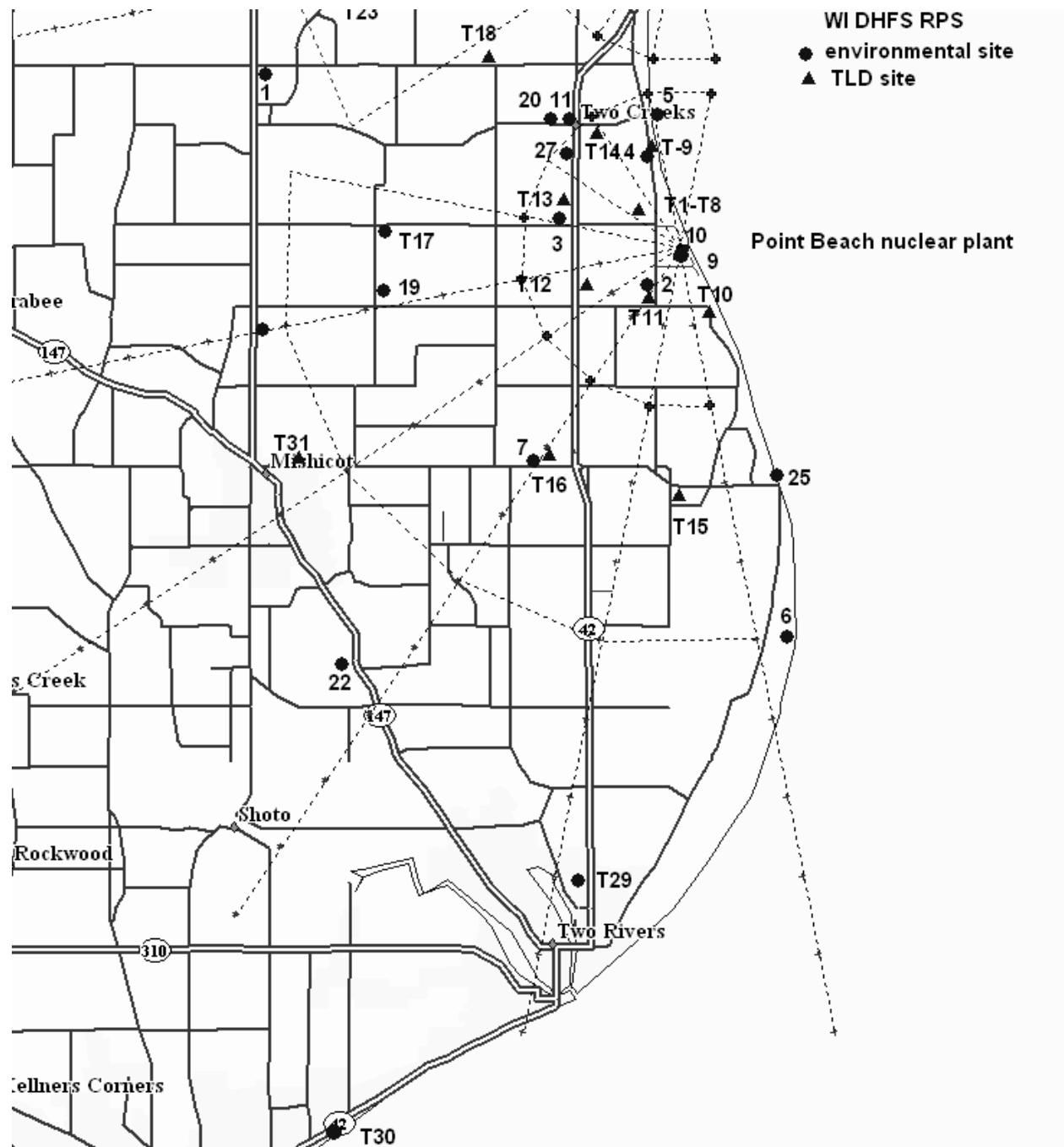


Figure 2. Point Beach - Kewaunee environmental monitoring sampling sites in relation to the Point Beach plant.

Results and Discussion

Air Particulate

A summary of reported activities by WI DHFS for air particulate samples is included in Table 4. Results from the individual sample analyses are listed in Tables 5-6.

From the gross beta activities listed in Table 5, it may be noted that there are no significant differences due to distance from either the Kewaunee or the Point Beach facility. With no significant differences due to distance, an increase in gross beta activity attributable to the Kewaunee or the Point Beach facilities is not evident.

The gamma isotopic analysis of the quarterly air particulate filter composites detected only small amounts of the radioisotopes listed in Table 4. All other radioisotopes were below their respective minimum detectable concentration. Beryllium-7 (^{7}Be), detected in all composites, is a naturally occurring radioisotope that is constantly produced through nuclear reactions between cosmic rays and nuclei in the atmosphere and is detected in air composites from other areas of the state.

Influence by the Kewaunee or the Point Beach nuclear facilities on air quality is not evident from air particulate analysis.

Air Iodine

A summary of reported activities by WI DHFS for air iodine samples is included in Table 4. Results from the individual sample analyses are listed in Table 5.

Air iodine measurements were all below the MDC of 0.07 pCi/m³.

Ambient Gamma Radiation (TLD)

A summary of reported activities by WI DHFS for direct radiation is included in Table 4. Results from the individual sample analyses are listed in Table 7.

Significant differences in exposure were not noticed at different distances from either the Kewaunee or the Point Beach nuclear facilities for sites PBK-T9 through PBK-T31. Excluding the sites around the perimeter of the Point Beach ISFSI (T1 – T8), the average quarterly exposure from the remaining 23 sites was 14.1 ± 2.2 milliroentgens. The average quarterly exposure for 2004 is at background levels and is comparable to other areas within Wisconsin.

Precipitation

A summary of reported activities by WI DHFS for precipitation samples is included in Table 4. Results from the individual sample analyses are listed in Table 8.

The gross beta activity in precipitation was within the normal range of activity when compared to previous year's data.

Fish

A summary of reported activities by WI DHFS for fish samples is included in Table 4. Results from the individual sample analyses are listed in Table 9.

The fish samples showed no unusual activities. The reported activities for cesium-137 (^{137}Cs) were also detected in previous years and are probably attributable to residual fallout from previous atmospheric nuclear weapons testing.

Shoreline Sediment

A summary of reported activities by WI DHFS for shoreline sediment samples is included in Table 4. Results from the individual sample analyses are listed in Table 10.

Analysis of the shoreline samples showed no unusual activities. Naturally occurring potassium-40 (^{40}K) was detected in all samples. The reported activities for cesium-137 (^{137}Cs) were also detected in previous years and are probably attributable to residual fallout from previous atmospheric nuclear weapons testing. Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Surface Water

A summary of reported activities by WI DHFS for surface water samples is included in Table 4. Results from the individual sample analyses are listed in Table 11.

From the gamma isotopic analysis all radioisotopes were below their respective minimum detectable concentration. Except for two reported activities for tritium, all reported activities for gross beta, gross alpha and tritium (^3H) are at background levels and are comparable to data from previous years. The detected tritium activities are only a small fraction of allowable federal discharge limits. The surface water samples uniformly show activities well below state or federal standards.

Well Water

A summary of reported activities by WI DHFS for well water samples is included in Table 4. Results from the individual sample analyses are listed in Table 12.

The well water samples showed no unusual gross alpha and gross beta activities and all activities for tritium (^3H) were less than its minimum detectable concentration. The measured activities are all below state and federal standards.

Milk

A summary of reported activities by WI DHFS for milk samples is included in Table 4. Results from the individual sample analyses are listed in Table 13.

The analysis of milk samples detected no unusual activities. Naturally occurring potassium-40 (^{40}K) was detected in all samples. The detected activities for strontium-90 (^{90}Sr), attributable to residual fallout from previous atmospheric nuclear weapons testing, were also detected in previous years at similar activity levels.

Influence by the Kewaunee or Point Beach facilities is not evident in milk samples.

Vegetation

A summary of reported activities by WI DHFS for vegetation samples is included in Table 4. Results from the individual sample analyses are listed in Table 14.

Analysis of the vegetation samples showed no unusual activities. The gamma isotopic analysis detected only small amounts of naturally occurring potassium-40 (^{40}K) and beryllium-7 (^7Be) listed in Table 4. Influence by the Kewaunee or Point Beach facilities in vegetation samples is not evident.

Soil

A summary of reported activities by WI DHFS for soil samples is included in Table 4. Results from the individual sample analyses are listed in Table 15.

Analysis of the soil samples showed no unusual activities. Naturally occurring potassium-40 (^{40}K) was detected in all samples. The reported activities for cesium-137 (^{137}Cs) were also detected in previous years and are probably attributable to residual fallout from previous atmospheric nuclear weapons testing. Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Point Beach ISFSI

A summary of reported activities by WI DHFS for ambient gamma radiation monitored in the vicinity of the Point Beach Independent Spent Fuel Storage Installation (ISFSI) is included in Table 7.

Ambient gamma exposure levels greater than background, as measured by thermoluminescent dosimeters (TLDs), are apparent at all sites (T1 – T8) that are on the Point Beach ISFSI perimeter fence closest to the ventilated storage casks. An increase in ambient gamma exposure levels at sites T9 - T14 (0.8 – 1.9 miles from the Point Beach ISFSI) or at sites T15 – T31 (greater than 2 miles from the Point Beach ISFSI) was not evident and the ambient gamma exposure levels are consistent with previous years data. The average standard quarterly ambient gamma exposure for 2004 for sites T9 – T31 was 14.1 ± 2.2 milliroentgens and for sites T1 – T8 varied from 19.8 – 77.6 milliroentgens depending on the distance from the storage casks.

Dose to an Average Individual

Federal regulations 10 CFR 20, 10 CFR 50 Appendix I and 40 CFR 190 restrict the annual exposure of the population from all parts of the nuclear fuel cycle, including nuclear power plants. Doses resulting from gaseous and liquid effluent releases from the Point Beach or Kewaunee nuclear generating facilities are less than the limits as stated in these Federal regulations.

The WI DHFS limits for permissible levels of radiation exposure from external sources in unrestricted areas is defined in the Wis. Adm. Code section HFS 157.23. Doses resulting from gaseous and liquid effluent releases from the Point Beach or Kewaunee nuclear generating facilities are less than the limits as stated in Wis. Adm. Code section HFS 157.23.

References

State of Wisconsin, Wisconsin Administrative Code, HFS 157.23

State of Wisconsin, "FINAL ENVIRONMENTAL IMPACT STATEMENT, Point Beach Nuclear Power Plant Plant Projects Proposed by Wisconsin Electric Power Company, Temporary Storage of Spent Nuclear Fuel in Dry Casks, PSC Docket 6630-CE-197, Unit 2 Steam Generator Replacement, PSC Docket 6630-CE-209, AUGUST 1994".

U.S. Environmental Protection Agency, Environmental Radiation Requirements for Normal Operations of Activities in the Uranium Fuel Cycle, EPA 520/4-76-016, 40 CFR Part 190, November 1976.

U.S. Nuclear Regulatory Commission, Title 10, Part 20.

U.S. Nuclear Regulatory Commission, Title 10, Part 50, Appendix I.

Table 4. Sample activity summary for the Point Beach - Kewaunee environmental monitoring program.

Sample type (units)	MDC	Number of samples ^a	Analysis	Range
Air Particulate (pCi/m ³)	0.003	311 / 311	gross beta	0.005 - 0.037
	0.015	24 / 24	gamma isotopic Be-7	0.040 - 0.071
	0.002	24 / 0	Mn-54	< 0.0007
	0.002	24 / 0	Co-58	< 0.0012
	0.010	24 / 0	Fe-59	< 0.0029
	0.005	24 / 0	Co-60	< 0.0009
	0.010	24 / 0	Zn-65	< 0.0017
	0.003	24 / 0	Nb-95	< 0.0017
	0.006	24 / 0	Zr-95	< 0.0021
	0.004	24 / 0	Ru-103	< 0.0014
	0.010	24 / 0	Ru-106	< 0.0070
	0.010	24 / 0	I-131	< 0.24
	0.002	24 / 0	Cs-134	< 0.0006
	0.002	24 / 0	Cs-137	< 0.0007
	0.020	24 / 0	Ba-140	< 0.044
	0.010	24 / 0	La-140	< 0.020
	0.004	24 / 0	Ce-141	< 0.0019
	0.006	24 / 0	Ce-144	< 0.0028
Air Iodine (pCi/m ³)	0.07	156 / 0	I-131	< 0.070
Surface Water (pCi/liter)	2.5	39 / 17	gross beta (sol)	< 3.0 - 4.1
	2.5	39 / 1	gross beta (insol)	< 2.5 - 2.3
	2.8	39 / 0	gross alpha (sol)	< 2.2
	2.8	39 / 2	gross alpha (insol)	< 1.5 - 1.6
	700	16 / 2	H-3	< 300 - 800
	0.5	23 / 0	I-131	< 0.4
	4.0	16 / 0	Sr-89	< 1.4
	1.0	16 / 7	Sr-90	< 0.6 - 1.1
	13	38 / 0	Mn-54	< 13
	15	38 / 0	Co-58	< 12
	30	38 / 0	Fe-59	< 28
	15	38 / 0	Co-60	< 15
	30	38 / 0	Zn-65	< 25
	15	38 / 0	Nb-95	< 13
	30	38 / 0	Zr-95	< 20
	20	38 / 0	I-131	< 23
	13	38 / 0	Cs-134	< 12
	12	38 / 0	Cs-137	< 12
	60	38 / 0	Ba-140	< 60
	20	38 / 0	La-140	< 20

Table 4. Sample activity summary for the Point Beach - Kewaunee environmental monitoring program.

Error! Bookmark not defined Sample type	MDC	Number of samples ^a	Analysis	Range
Fish (pCi/kg wet)			gamma isotopic	
	600	12 / 12	K-40	2050 - 3700
	50	12 / 0	Mn-54	< 25
	65	12 / 0	Co-58	< 26
	145	12 / 0	Fe-59	< 70
	70	12 / 0	Co-60	< 31
	130	12 / 0	Zn-65	< 70
	50	12 / 0	Nb-95	< 28
	100	12 / 0	Zr-95	< 41
	50	12 / 0	Cs-134	< 24
	60	12 / 10	Cs-137	< 26 - 59
Shoreline Sediment (pCi/kg dry)	6000	7 / 7	gross beta	9000 - 12000
	8000	7 / 0	gross alpha	< 7000
			gamma isotopic	
	700	7 / 7	K-40	5020 - 11200
	60	7 / 0	Mn-54	< 18
	90	7 / 0	Co-58	< 16
	600	7 / 0	Fe-59	< 46
	90	7 / 0	Co-60	< 19
	300	7 / 0	Zn-65	< 48
	100	7 / 0	Nb-95	< 18
	200	7 / 0	Zr-95	< 25
	80	7 / 0	Cs-134	< 22
	80	7 / 7	Cs-137	15 - 35
Vegetation (pCi/kg wet)	5000	20 / 0	gross alpha	< 4000
	5000	20 / 20	gross beta	3900 - 8200
			gamma isotopic	
	800	20 / 20	Be-7	360 - 2600
	1500	20 / 20	K-40	2400 - 6400
	90	20 / 0	Mn-54	< 60
	100	20 / 0	Co-58	< 60
	200	20 / 0	Fe-59	< 120
	100	20 / 0	Co-60	< 60
	250	20 / 0	Zn-65	< 140
	100	20 / 0	Nb-95	< 60
	200	20 / 0	Zr-95	< 110
	130	20 / 0	I-131	< 270
	80	20 / 0	Cs-134	< 53
	90	20 / 0	Cs-137	< 70
	350	20 / 0	Ba-140	< 250
	100	20 / 0	La-140	< 90

Table 4. Sample activity summary for the Point Beach - Kewaunee environmental monitoring program.

Sample type (units)	MDC	Number of samples ^a	Analysis	Range
Soil (pCi/kg dry)	6000 10000 700 60 90 600 90 300 100 250 80 80	20 / 20 20 / 4 20 / 20 20 / 0 20 / 19	gross beta gross alpha gamma isotopic K-40 Mn-54 Co-58 Fe-59 Co-60 Zn-65 Nb-95 Zr-95 Cs-134 Cs-137	9000 - 39000 < 7000 - 8000 6600 - 24300 < 35 < 38 < 220 < 38 < 110 < 220 < 70 < 47 < 17 - 420
Milk (pCi/liter)	1.0 0.5 300 15 15 40 15 40 15 40 15 15 15 15 15 60 15	36 / 36 26 / 0 36 / 36 36 / 0 36 / 0	Sr-90 I-131 gamma isotopic K-40 Mn-54 Co-58 Fe-59 Co-60 Zn-65 Nb-95 Zr-95 I-131 Cs-134 Cs-137 Ba-140 La-140	0.4 - 1.3 < 0.9 1300 - 1770 < 14 < 14 < 27 < 16 < 34 < 13 < 23 < 17 < 13 < 14 < 53 < 17
Well Water (pCi/liter)	5.0 5.0 300 ^b	10 / 5 10 / 2 10 / 0	gross beta gross alpha H-3	< 1.6 - 12.0 < 3.0 - 2.2 < 300
Precipitation (nCi/m ²)	1.5 ^b 300 ^b	12 / 11 12 / 0	gross beta H-3	< 0.25 - 0.73 < 59
Ambient Radiation (mR/Std Qtr)	1.0 ^c	124 / 124	exposure	10.0 - 81.0

a - Number of analyses / number of analyses detected above the WI DHFS MDC.

b - MDC activities expressed in units of pCi/liter.

c - mR/TLD

Table 5. WI DHFS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m³

Site: PBK-1

Collection Date	Volume m3	Air Particulate	Collection Date	Volume m3	Air Particulate
01/07/04	764	0.029 +- 0.002	07/07/04	630	0.008 +- 0.002
01/15/04	774	0.028 +- 0.002	07/14/04	601	0.010 +- 0.002
01/21/04	580	0.012 +- 0.003	07/21/04	613	0.019 +- 0.002
01/28/04	698	0.017 +- 0.002	07/28/04	609	0.013 +- 0.002
02/05/04	774	0.034 +- 0.002	08/03/04	512	0.026 +- 0.003
02/11/04	576	0.027 +- 0.003	08/11/04	697	0.013 +- 0.002
02/19/04	792	0.027 +- 0.002	08/18/04	602	0.016 +- 0.002
02/25/04	568	0.029 +- 0.003	08/26/04	690	0.015 +- 0.002
03/03/04	641	0.018 +- 0.002	09/02/04	605	0.011 +- 0.002
03/10/04	647	0.025 +- 0.002	09/08/04	513	0.028 +- 0.003
03/18/04	754	0.018 +- 0.002	09/16/04	703	0.020 +- 0.002
03/26/04	735	0.017 +- 0.002	09/23/04	592	0.024 +- 0.002
04/03/04	743	0.012 +- 0.002	09/30/04	609	0.018 +- 0.002
1st Qtr			3rd Qtr		
mean +- s.d.		0.023 +- 0.007	mean +- s.d.		0.017 +- 0.006
04/11/04	755	0.013 +- 0.002	10/06/04	535	0.015 +- 0.002
04/17/04	552	0.015 +- 0.003	10/14/04	708	0.019 +- 0.002
04/24/04	622	0.012 +- 0.002	10/21/04	605	0.010 +- 0.002
05/01/04	652	0.014 +- 0.002	10/27/04	536	0.015 +- 0.002
05/08/04	646	0.012 +- 0.002	11/05/04	782	0.013 +- 0.002
05/15/04	630	0.012 +- 0.002	11/10/04	448	0.020 +- 0.003
05/23/04	731	0.010 +- 0.002	11/17/04	608	0.026 +- 0.002
05/29/04	523	0.008 +- 0.003	11/24/04	616	0.024 +- 0.002
06/05/04	647	0.008 +- 0.002	12/01/04	635	0.019 +- 0.002
06/11/04	545	0.013 +- 0.003	12/09/04	726	0.021 +- 0.002
06/17/04	520	0.012 +- 0.003	12/17/04	732	0.025 +- 0.002
06/23/04	536	0.009 +- 0.003	12/22/04	476	0.018 +- 0.003
06/30/04	619	0.009 +- 0.002	12/29/04	655	0.028 +- 0.002
2nd Qtr			4th Qtr		
mean +- s.d.		0.011 +- 0.002	mean +- s.d.		0.019 +- 0.005

Table 5. WI DHFS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m³

Site: PBK-4

Collection Date	Volume m3	Air Particulate	Air Iodine	Collection Date	Volume m3	Air Particulate	Air Iodine
01/07/04	831	0.029 +- 0.002	< 0.012	07/07/04	696	0.007 +- 0.002	< 0.027
01/12/04	463	0.029 +- 0.003	< 0.027	07/12/04	408	0.007 +- 0.002	< 0.040
01/19/04	630	0.019 +- 0.002	< 0.014	07/19/04	574	0.016 +- 0.002	< 0.039
01/26/04	642	0.015 +- 0.002	< 0.019	07/26/04	567	0.015 +- 0.002	< 0.060
02/04/04	854	0.028 +- 0.002	< 0.012	08/04/04	753	0.022 +- 0.002	< 0.032
02/09/04	460	0.033 +- 0.003	< 0.029	08/09/04	413	0.013 +- 0.003	< 0.025
02/16/04	627	0.024 +- 0.002	< 0.019	08/16/04	610	0.009 +- 0.002	< 0.026
02/23/04	631	0.032 +- 0.002	< 0.018	08/23/04	561	0.018 +- 0.002	< 0.040
03/03/04	806	0.020 +- 0.002	< 0.013	09/01/04	757	0.010 +- 0.002	< 0.023
03/08/04	440	0.019 +- 0.003	< 0.026	09/07/04	488	0.027 +- 0.003	< 0.029
03/15/04	630	0.028 +- 0.002	< 0.017	09/13/04	503	0.018 +- 0.002	< 0.035
03/22/04	657	0.013 +- 0.002	< 0.019	09/20/04	588	0.021 +- 0.002	< 0.030
03/29/04	611	0.017 +- 0.002	< 0.052	09/27/04	592	0.022 +- 0.002	< 0.031
1st Qtr		3rd Qtr		mean +- s.d.		mean +- s.d.	
mean +- s.d.		0.024 +- 0.007		< 0.021		0.016 +- 0.006	
04/07/04	804	0.014 +- 0.002	< 0.047	10/06/04	778	0.013 +- 0.002	< 0.018
04/12/04	437	0.011 +- 0.003	< 0.060	10/11/04	424	0.022 +- 0.003	< 0.053
04/19/04	620	0.018 +- 0.002	< 0.043	10/18/04	613	0.010 +- 0.002	< 0.024
04/26/04	632	0.009 +- 0.002	< 0.040	10/25/04	597	0.011 +- 0.002	< 0.032
05/04/04	796	0.012 +- 0.002	< 0.022	11/03/04	775	0.013 +- 0.002	< 0.021
05/10/04	437	0.018 +- 0.003	< 0.043	11/08/04	449	0.019 +- 0.003	< 0.057
05/17/04	598	0.010 +- 0.002	< 0.032	11/15/04	602	0.019 +- 0.002	< 0.039
05/24/04	610	0.010 +- 0.002	< 0.044	11/23/04	691	0.026 +- 0.002	< 0.023
06/02/04	792	0.008 +- 0.002	< 0.022	12/01/04	722	0.019 +- 0.002	< 0.025
06/07/04	413	0.012 +- 0.004	< 0.047	12/06/04	442	0.021 +- 0.003	< 0.042
06/14/04	612	0.012 +- 0.002	< 0.035	12/13/04	626	0.021 +- 0.002	< 0.027
06/21/04	571	0.010 +- 0.003	< 0.030	12/20/04	622	0.019 +- 0.002	< 0.030
06/29/04	667	0.008 +- 0.002	< 0.030	12/27/04	742	0.024 +- 0.002	< 0.029
2nd Qtr		4th Qtr		mean +- s.d.		mean +- s.d.	
mean +- s.d.		0.012 +- 0.003		< 0.038		0.018 +- 0.005	

Table 5. WI DHFS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m³

Site: PBK-7

Collection Date	Volume m3	Air Particulate	Collection Date	Volume m3	Air Particulate
01/07/04	572	0.028 +- 0.002	07/07/04	412	0.006 +- 0.002
01/15/04	589	0.028 +- 0.003	07/14/04	401	0.011 +- 0.003
01/21/04	437	0.013 +- 0.003	07/21/04	414	0.019 +- 0.003
01/28/04	526	0.015 +- 0.003	07/28/04	418	0.013 +- 0.003
02/05/04	596	0.035 +- 0.002	08/03/04	342	0.027 +- 0.004
02/11/04	449	0.026 +- 0.003	08/11/04	467	0.014 +- 0.002
02/19/04	585	0.029 +- 0.003	08/18/04	406	0.013 +- 0.003
02/25/04	424	0.028 +- 0.004	08/26/04	455	0.014 +- 0.003
03/03/04	484	0.018 +- 0.003	09/02/04	403	0.014 +- 0.003
03/10/04	488	0.028 +- 0.003	09/08/04	345	0.026 +- 0.004
03/18/04	571	0.015 +- 0.003	*a 09/16/04		
03/26/04	554	0.015 +- 0.003	*b 09/23/04		
04/03/04	539	0.012 +- 0.003	09/30/04	414	0.018 +- 0.003
1st Qtr			3rd Qtr		
mean +- s.d.		0.022 +- 0.008	mean +- s.d.		0.016 +- 0.006
04/11/04	557	0.013 +- 0.003	10/06/04	369	0.015 +- 0.003
04/17/04	418	0.014 +- 0.004	10/14/04	588	0.015 +- 0.002
04/24/04	444	0.012 +- 0.003	10/21/04	412	0.008 +- 0.003
05/01/04	478	0.013 +- 0.003	10/27/04	355	0.012 +- 0.003
05/08/04	453	0.015 +- 0.003	11/05/04	524	0.012 +- 0.002
05/15/04	439	0.014 +- 0.003	11/10/04	325	0.017 +- 0.003
05/23/04	494	0.009 +- 0.003	11/17/04	440	0.023 +- 0.003
05/29/04	359	0.006 +- 0.004	11/24/04	546	0.020 +- 0.002
06/05/04	451	0.010 +- 0.003	12/01/04	458	0.020 +- 0.003
06/11/04	351	0.017 +- 0.004	12/09/04	552	0.019 +- 0.002
06/17/04	354	0.011 +- 0.004	12/17/04	536	0.023 +- 0.003
06/23/04	359	0.008 +- 0.004	12/22/04	355	0.018 +- 0.003
06/30/04	426	0.008 +- 0.003	12/29/04	504	0.027 +- 0.003
2nd Qtr			4th Qtr		
mean +- s.d.		0.012 +- 0.003	mean +- s.d.		0.018 +- 0.005

*a – No gross beta data was available. Air sampler was inadvertently not turned on during the indicated time period.

*b – No gross beta data was available. During sample exchange, the wind blew the air filter and it could not be retrieved.

Table 5. WI DHFS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m³

Site: PBK-8

Collection Date	Volum m3	Air Particulate	Collection Date	Volum m3	Air Particulate
01/06/04	646	0.033 +- 0.002	07/06/04	609	0.011 +- 0.002
01/13/04	634	0.032 +- 0.002	07/13/04	597	0.009 +- 0.002
01/20/04	644	0.017 +- 0.002	07/20/04	605	0.017 +- 0.002
01/27/04	687	0.016 +- 0.002	07/27/04	595	0.014 +- 0.002
02/03/04	670	0.033 +- 0.002	08/03/04	586	0.024 +- 0.002
02/09/04	584	0.035 +- 0.003	08/10/04	592	0.016 +- 0.002
02/16/04	640	0.027 +- 0.002	08/18/04	694	0.015 +- 0.002
02/23/04	640	0.035 +- 0.002	08/23/04	410	0.014 +- 0.003
03/01/04	651	0.023 +- 0.002	08/31/04	677	0.012 +- 0.002
03/08/04	658	0.022 +- 0.002	09/06/04	511	0.026 +- 0.003
03/15/04	629	0.031 +- 0.002	09/15/04	753	0.020 +- 0.002
03/23/04	742	0.015 +- 0.002	09/21/04	492	0.020 +- 0.003
03/31/04	739	0.017 +- 0.002	09/28/04	588	0.024 +- 0.002
1st Qtr		0.026 +- 0.008	3rd Qtr		0.017 +- 0.005
mean +- s.d.			mean +- s.d.		
04/06/04	541	0.012 +- 0.003	10/05/04	612	0.015 +- 0.002
04/13/04	641	0.013 +- 0.002	10/11/04	536	0.021 +- 0.002
04/20/04	641	0.016 +- 0.002	10/18/04	623	0.010 +- 0.002
04/27/04	625	0.012 +- 0.002	10/25/04	593	0.010 +- 0.002
05/03/04	537	0.014 +- 0.003	11/01/04	600	0.016 +- 0.002
05/10/04	641	0.016 +- 0.002	11/08/04	597	0.015 +- 0.002
05/18/04	712	0.012 +- 0.002	11/16/04	693	0.021 +- 0.002
05/24/04	524	0.011 +- 0.003	11/24/04	688	0.026 +- 0.002
06/01/04	704	0.010 +- 0.002	12/01/04	601	0.022 +- 0.002
06/08/04	614	0.017 +- 0.002	12/07/04	495	0.023 +- 0.003
06/15/04	620	0.012 +- 0.002	12/15/04	665	0.026 +- 0.002
06/22/04	612	0.012 +- 0.002	12/21/04	528	0.022 +- 0.003
06/29/04	596	0.008 +- 0.002	12/28/04	588	0.026 +- 0.002
2nd Qtr		0.013 +- 0.003	4th Qtr		0.019 +- 0.006
mean +- s.d.			mean +- s.d.		

Table 5. WI DHFS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m³

Site: PBK-17

Collection Volume				Collection Volume			
Date	m3	Air Particulate	Air Iodine	Date	m3	Air Particulate	Air Iodine
01/02/04	668	0.026 +- 0.002	< 0.009	07/09/04	594	0.005 +- 0.002	< 0.035
01/09/04	648	0.027 +- 0.002	< 0.024	07/16/04	598	0.012 +- 0.002	< 0.045
01/16/04	638	0.029 +- 0.002	< 0.026	07/23/04	570	0.018 +- 0.002	< 0.037
01/23/04	641	0.016 +- 0.002	< 0.022	*b 07/30/04	578	0.016 +- 0.002	
01/30/04	656	0.019 +- 0.002	< 0.019	08/06/04	615	0.019 +- 0.002	< 0.031
02/06/04	637	0.029 +- 0.002	< 0.023	08/13/04	597	0.012 +- 0.002	< 0.035
02/13/04 *a	275	0.027 +- 0.005	< 0.060	08/20/04	586	0.019 +- 0.002	< 0.028
02/20/04	622	0.029 +- 0.002	< 0.025	08/27/04	597	0.013 +- 0.002	< 0.009
02/27/04	613	0.022 +- 0.002	< 0.025	09/03/04	592	0.014 +- 0.002	< 0.029
03/06/04	613	0.020 +- 0.002	< 0.020	09/10/04	588	0.020 +- 0.002	< 0.040
03/13/04	645	0.026 +- 0.002	< 0.019	09/17/04	592	0.023 +- 0.002	< 0.033
03/22/04	874	0.015 +- 0.002	< 0.013	09/24/04	592	0.025 +- 0.002	< 0.034
03/26/04	352	0.018 +- 0.004	< 0.033	10/01/04	607	0.016 +- 0.002	< 0.026
04/02/04	629	0.011 +- 0.002	< 0.070				
1st Qtr				3rd Qtr			
mean +- s.d.		0.022 +- 0.006	< 0.028	mean +- s.d.		0.016 +- 0.005	< 0.032
04/09/04	603	0.012 +- 0.002	< 0.070	10/08/04	621	0.018 +- 0.002	< 0.036
04/16/04	613	0.012 +- 0.002	< 0.070	10/15/04	593	0.011 +- 0.002	< 0.024
04/23/04	611	0.012 +- 0.002	< 0.053	10/22/04	624	0.007 +- 0.002	< 0.007
04/30/04	620	0.013 +- 0.002	< 0.041	10/29/04	365	0.018 +- 0.003	< 0.012
05/07/04	609	0.013 +- 0.002	< 0.036	11/05/04	613	0.009 +- 0.002	< 0.030
05/14/04	590	0.014 +- 0.003	< 0.029	11/12/04	623	0.019 +- 0.002	< 0.037
05/24/04	849	0.009 +- 0.002	< 0.031	11/19/04	604	0.027 +- 0.002	< 0.060
05/28/04	363	0.006 +- 0.004	< 0.060	11/24/04	447	0.017 +- 0.003	< 0.019
06/04/04	585	0.009 +- 0.003	< 0.035	12/03/04	812	0.019 +- 0.002	< 0.030
06/11/04	590	0.016 +- 0.003	< 0.031	12/10/04	624	0.017 +- 0.002	< 0.027
06/18/04	588	0.011 +- 0.003	< 0.035	12/17/04	637	0.021 +- 0.002	< 0.044
06/25/04	605	0.009 +- 0.002	< 0.033	12/23/04	547	0.016 +- 0.002	< 0.042
07/02/04	592	0.012 +- 0.003	< 0.036	12/30/04	645	0.030 +- 0.002	< 0.007
2nd Qtr				4th Qtr			
mean +- s.d.		0.011 +- 0.003	< 0.043	mean +- s.d.		0.018 +- 0.006	< 0.029

*a - Due to an electrical problem, the air site was off for approximately 4 days and 3 hours during the indicated collection period.

*b – No air iodine results were available. The cartridge sample was inadvertently lost.

Table 5. WI DHFS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m³

Site: PBK-18

Collection Date	Volum m3	Air Particulate	Air Iodine	Collection Date	Volum m3	Air Particulate	Air Iodine
01/07/04	875	0.028 +- 0.002	< 0.011	07/07/04	729	0.008 +- 0.002	< 0.026
01/12/04	483	0.025 +- 0.003	< 0.034	07/12/04	437	0.006 +- 0.002	< 0.039
01/19/04	654	0.018 +- 0.002	< 0.018	07/19/04	610	0.014 +- 0.002	< 0.036
01/26/04	668	0.015 +- 0.002	< 0.018	07/26/04	574	0.013 +- 0.002	< 0.052
02/04/04	889	0.031 +- 0.002	< 0.015	08/04/04	811	0.022 +- 0.002	< 0.028
02/09/04	478	0.028 +- 0.003	< 0.027	08/09/04	439	0.013 +- 0.003	< 0.022
02/16/04	652	0.024 +- 0.002	< 0.018	08/16/04	647	0.009 +- 0.002	< 0.037
02/23/04	661	0.037 +- 0.002	< 0.016	08/23/04	596	0.018 +- 0.002	< 0.033
03/03/04	848	0.020 +- 0.002	< 0.011	09/01/04	816	0.010 +- 0.002	< 0.025
03/08/04	456	0.017 +- 0.003	< 0.032	09/07/04	523	0.027 +- 0.003	< 0.036
03/15/04	663	0.026 +- 0.002	< 0.016	09/13/04	536	0.017 +- 0.002	< 0.055
03/22/04	688	0.012 +- 0.002	< 0.022	09/20/04	631	0.021 +- 0.002	< 0.027
03/29/04	643	0.017 +- 0.002	< 0.034	09/27/04	627	0.024 +- 0.002	< 0.026
1st Qtr		3rd Qtr		mean +- s.d.		mean +- s.d.	
mean +- s.d.		0.023 +- 0.007		< 0.021		0.016 +- 0.007	
04/07/04	833	0.011 +- 0.002	< 0.046	10/06/04	823	0.014 +- 0.002	< 0.020
04/12/04	457	0.010 +- 0.003	< 0.070	10/11/04	455	0.022 +- 0.003	< 0.054
04/19/04	652	0.015 +- 0.002	< 0.051	10/18/04	647	0.010 +- 0.002	< 0.030
04/26/04	657	0.009 +- 0.002	< 0.032	10/25/04	633	0.011 +- 0.002	< 0.028
05/04/04	834	0.012 +- 0.002	< 0.021	11/03/04	813	0.012 +- 0.002	< 0.022
05/10/04	458	0.015 +- 0.003	< 0.041	11/08/04	471	0.017 +- 0.003	< 0.043
05/17/04	622	0.010 +- 0.002	< 0.025	11/15/04	635	0.020 +- 0.002	< 0.040
05/24/04	641	0.011 +- 0.002	< 0.039	11/23/04	731	0.028 +- 0.002	< 0.024
06/02/04	833	0.007 +- 0.002	< 0.018	12/01/04	757	0.019 +- 0.002	< 0.027
06/07/04	440	0.013 +- 0.003	< 0.044	12/06/04	463	0.019 +- 0.003	< 0.040
06/14/04	642	0.010 +- 0.002	< 0.029	12/13/04	654	0.021 +- 0.002	< 0.034
06/21/04	605	0.011 +- 0.002	< 0.031	12/20/04	651	0.020 +- 0.002	< 0.027
06/29/04	705	0.008 +- 0.002	< 0.028	12/27/04	777	0.022 +- 0.002	< 0.025
2nd Qtr		4th Qtr		mean +- s.d.		mean +- s.d.	
mean +- s.d.		0.011 +- 0.002		< 0.037		0.018 +- 0.005	

Table 6. WI DHFS gamma isotopic analysis results from the quarterly composites of air particulate filters collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of

Site: PBK-1	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
Be-7	0.046	+/- 0.002		0.058	+/- 0.002		0.062	+/- 0.002
Mn-54	<	0.0002		<	0.0001		<	0.0004
Co-58	<	0.0003		<	0.0002		<	0.0005
Fe-59	<	0.0009		<	0.0004		<	0.0014
Co-60	<	0.0002		<	0.0002		<	0.0003
Zn-65	<	0.0004		<	0.0003		<	0.0008
Nb-95	<	0.0006		<	0.0002		<	0.0007
Zr-95	<	0.0005		<	0.0003		<	0.0009
Ru-103	<	0.0004		<	0.0002		<	0.0006
Ru-106	<	0.0015		<	0.0012		<	0.0031
I-131	<	0.0700		<	0.0012		<	0.0240
Cs-134	<	0.0002		<	0.0002		<	0.0003
Cs-137	<	0.0001		<	0.0001		<	0.0003
Ba-140	<	0.0217		<	0.0018		<	0.0160
La-140	<	0.0095		<	0.0009		<	0.0070
Ce-141	<	0.0006		<	0.0002		<	0.0008
Ce-144	<	0.0006		<	0.0005		<	0.0013
								< 0.0021
Site: PBK-4								
Be-7	0.040	+/- 0.002		0.062	+/- 0.003		0.057	+/- 0.003
Mn-54	<	0.0003		<	0.0005		<	0.0004
Co-58	<	0.0005		<	0.0005		<	0.0006
Fe-59	<	0.0014		<	0.0013		<	0.0016
Co-60	<	0.0003		<	0.0006		<	0.0004
Zn-65	<	0.0007		<	0.0009		<	0.0008
Nb-95	<	0.0008		<	0.0007		<	0.0010
Zr-95	<	0.0009		<	0.0009		<	0.0009
Ru-103	<	0.0008		<	0.0006		<	0.0007
Ru-106	<	0.0026		<	0.0040		<	0.0033
I-131	<	0.0700		<	0.0048		<	0.0350
Cs-134	<	0.0003		<	0.0004		<	0.0003
Cs-137	<	0.0003		<	0.0004		<	0.0003
Ba-140	<	0.0174		<	0.0060		<	0.0220
La-140	<	0.0069		<	0.0028		<	0.0100
Ce-141	<	0.0010		<	0.0007		<	0.0010
Ce-144	<	0.0012		<	0.0018		<	0.0014
								< 0.0023
Site: PBK-7								
Be-7	0.047	+/- 0.002		0.059	+/- 0.002		0.060	+/- 0.004
Mn-54	<	0.0002		<	0.0003		<	0.0007
Co-58	<	0.0004		<	0.0003		<	0.0012
Fe-59	<	0.0014		<	0.0008		<	0.0029
Co-60	<	0.0002		<	0.0003		<	0.0009
Zn-65	<	0.0005		<	0.0006		<	0.0017
Nb-95	<	0.0009		<	0.0004		<	0.0017
Zr-95	<	0.0008		<	0.0005		<	0.0021
Ru-103	<	0.0007		<	0.0003		<	0.0014
Ru-106	<	0.0020		<	0.0023		<	0.0070
I-131	<	0.2300		<	0.0025		<	0.0700
Cs-134	<	0.0003		<	0.0003		<	0.0006
Cs-137	<	0.0002		<	0.0002		<	0.0007
Ba-140	<	0.0324		<	0.0034		<	0.0440
La-140	<	0.0113		<	0.0018		<	0.0200
Ce-141	<	0.0010		<	0.0004		<	0.0019
Ce-144	<	0.0008		<	0.0009		<	0.0027
								< 0.0006

Radioisotopes other than those reported were not detected.

Table 6. WI DHFS gamma isotopic analysis results from the quarterly composites of air particulate filters collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of

Site: PBK-8	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
Be-7	0.046	+/- 0.002	0.064	+/- 0.002	0.071	+/- 0.003	0.046	+/- 0.002
Mn-54	< 0.0002		< 0.0003		< 0.0005		< 0.0004	
Co-58	< 0.0003		< 0.0004		< 0.0007		< 0.0004	
Fe-59	< 0.0009		< 0.0009		< 0.0017		< 0.0010	
Co-60	< 0.0002		< 0.0003		< 0.0005		< 0.0005	
Zn-65	< 0.0004		< 0.0007		< 0.0011		< 0.0009	
Nb-95	< 0.0006		< 0.0004		< 0.0012		< 0.0005	
Zr-95	< 0.0005		< 0.0006		< 0.0013		< 0.0008	
Ru-103	< 0.0005		< 0.0004		< 0.0009		< 0.0005	
Ru-106	< 0.0014		< 0.0027		< 0.0042		< 0.0034	
I-131	< 0.1100		< 0.0035		< 0.0600		< 0.0021	
Cs-134	< 0.0002		< 0.0003		< 0.0004		< 0.0004	
Cs-137	< 0.0001		< 0.0003		< 0.0004		< 0.0004	
Ba-140	< 0.0190		< 0.0047		< 0.0290		< 0.0041	
La-140	< 0.0068		< 0.0018		< 0.0130		< 0.0018	
Ce-141	< 0.0006		< 0.0005		< 0.0012		< 0.0008	
Ce-144	< 0.0006		< 0.0011		< 0.0017		< 0.0024	
Site: PBK-17								
Be-7	0.043	+/- 0.002	0.055	+/- 0.002	0.061	+/- 0.003	0.043	+/- 0.002
Mn-54	< 0.0002		< 0.0001		< 0.0004		< 0.0004	
Co-58	< 0.0003		< 0.0002		< 0.0006		< 0.0004	
Fe-59	< 0.0012		< 0.0004		< 0.0015		< 0.0010	
Co-60	< 0.0002		< 0.0002		< 0.0004		< 0.0004	
Zn-65	< 0.0004		< 0.0004		< 0.0007		< 0.0008	
Nb-95	< 0.0008		< 0.0003		< 0.0009		< 0.0005	
Zr-95	< 0.0007		< 0.0003		< 0.0010		< 0.0007	
Ru-103	< 0.0006		< 0.0002		< 0.0007		< 0.0005	
Ru-106	< 0.0016		< 0.0012		< 0.0029		< 0.0031	
I-131	< 0.2400		< 0.0030		< 0.0600		< 0.0017	
Cs-134	< 0.0002		< 0.0001		< 0.0003		< 0.0003	
Cs-137	< 0.0002		< 0.0002		< 0.0003		< 0.0004	
Ba-140	< 0.0410		< 0.0032		< 0.0300		< 0.0034	
La-140	< 0.0140		< 0.0012		< 0.0130		< 0.0013	
Ce-141	< 0.0008		< 0.0005		< 0.0010		< 0.0007	
Ce-144	< 0.0007		< 0.0009		< 0.0012		< 0.0023	
Site: PBK-18								
Be-7	0.041	+/- 0.002	0.056	+/- 0.002	0.056	+/- 0.002	0.047	+/- 0.003
Mn-54	< 0.0002		< 0.0002		< 0.0003		< 0.0004	
Co-58	< 0.0003		< 0.0003		< 0.0006		< 0.0005	
Fe-59	< 0.0010		< 0.0007		< 0.0014		< 0.0012	
Co-60	< 0.0002		< 0.0003		< 0.0004		< 0.0005	
Zn-65	< 0.0004		< 0.0005		< 0.0007		< 0.0011	
Nb-95	< 0.0007		< 0.0004		< 0.0009		< 0.0006	
Zr-95	< 0.0006		< 0.0005		< 0.0010		< 0.0010	
Ru-103	< 0.0005		< 0.0003		< 0.0007		< 0.0005	
Ru-106	< 0.0014		< 0.0020		< 0.0028		< 0.0038	
I-131	< 0.2200		< 0.0029		< 0.0490		< 0.0032	
Cs-134	< 0.0002		< 0.0003		< 0.0003		< 0.0005	
Cs-137	< 0.0001		< 0.0002		< 0.0003		< 0.0004	
Ba-140	< 0.0209		< 0.0041		< 0.0250		< 0.0052	
La-140	< 0.0059		< 0.0017		< 0.0120		< 0.0016	
Ce-141	< 0.0007		< 0.0004		< 0.0010		< 0.0009	
Ce-144	< 0.0006		< 0.0010		< 0.0012		< 0.0028	

Radioisotopes other than those reported were not detected

Table 7. WI DHFS TLD network for the Point Beach – Kewaunee environmental monitoring program.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Date Placed:	01/07/04	04/02/04	07/07/04	10/06/04
Date Removed:	04/02/04	07/07/04	10/06/04	01/07/05
Days in the Field:	86	96	91	93
individual quarterly data is reported as: mR / Standard Quarter +- combined total uncertainty				
TLD sites located at the Point Beach ISFSI				
1	28.6 +- 4.3	28.6 +- 4.3	28.3 +- 4.2	34.3 +- 5.1
2	17.3 +- 2.6	17.0 +- 2.6	17.3 +- 2.6	27.4 +- 4.1
3	25.8 +- 3.9	25.9 +- 3.9	25.5 +- 3.8	29.1 +- 4.4
4	22.3 +- 3.3	23.0 +- 3.5	21.9 +- 3.3	25.0 +- 3.8
5	21.1 +- 3.2	20.9 +- 3.1	20.2 +- 3.0	22.8 +- 3.4
6	50.2 +- 7.5	51.4 +- 7.7	47.1 +- 7.1	53.2 +- 8.0
7	76.6 +- 11.5	78.8 +- 11.8	74.1 +- 11.1	81.0 +- 12.2
8	27.6 +- 4.1	26.9 +- 4.0	26.5 +- 4.0	30.5 +- 4.6
Quarterly average +- s.d.	33.7 +- 20.0	34.1 +- 20.8	32.6 +- 19.1	37.9 +- 19.8
TLD sites, excluding sites 1- 8) that are located 0 - 2 miles from either the Point Beach or the Kewaunee facility.				
*a 9	12.1 +- 2.4	13.2 +- 2.6	13.0 +- 2.6	14.7 +- 2.9
10	13.2 +- 2.6	16.2 +- 3.2	14.9 +- 3.0	23.7 +- 4.7
11	11.8 +- 2.4	14.1 +- 2.8	14.1 +- 2.8	15.3 +- 3.1
12	12.9 +- 2.6	14.3 +- 2.9	13.8 +- 2.8	15.2 +- 3.0
13	11.4 +- 2.3	14.6 +- 2.9	14.7 +- 2.9	15.9 +- 3.2
14	12.7 +- 2.5	14.3 +- 2.9	14.3 +- 2.9	15.8 +- 3.2
*c 19	13.2 +- 2.6	14.0 +- 2.8	15.1 +- 3.0	15.4 +- 3.1
20	12.4 +- 2.5	13.9 +- 2.8	14.3 +- 2.9	15.4 +- 3.1
21	12.0 +- 2.4	15.3 +- 3.1	14.8 +- 3.0	16.3 +- 3.3
22	15.1 +- 3.0	17.8 +- 3.6	17.1 +- 3.4	19.5 +- 3.9
Quarterly average +- s.d.	12.7 +- 1.0	14.8 +- 1.3	14.6 +- 1.1	16.7 +- 2.8
TLD sites that are located 2 - 5 miles from either the Point Beach or the Kewaunee facility.				
15	13.7 +- 2.7	14.6 +- 2.9	15.3 +- 3.1	15.8 +- 3.2
16	11.4 +- 2.3	11.6 +- 2.3	12.1 +- 2.4	13.1 +- 2.6
17	13.1 +- 2.6	13.9 +- 2.8	15.0 +- 3.0	15.2 +- 3.0
18	14.2 +- 2.8	17.3 +- 3.5	16.8 +- 3.4	19.0 +- 3.8
*b 23	14.1 +- 2.8	15.0 +- 3.0	15.8 +- 3.2	16.5 +- 3.3
24	11.5 +- 2.3	12.2 +- 2.4	12.1 +- 2.4	13.5 +- 2.7
25	14.3 +- 2.9	17.2 +- 3.4	17.5 +- 3.5	19.0 +- 3.8
26	12.5 +- 2.5	14.8 +- 3.0	13.6 +- 2.7	16.1 +- 3.2
Quarterly average +- s.d.	13.1 +- 1.2	14.6 +- 2.1	14.8 +- 2.0	16.0 +- 2.2
TLD sites that are located greater than 5 miles from either the Point Beach or the Kewaunee facility.				
27	11.6 +- 2.3	12.7 +- 2.5	12.6 +- 2.5	14.0 +- 2.8
28	11.0 +- 2.2	12.5 +- 2.5	12.5 +- 2.5	13.9 +- 2.8
29	10.5 +- 2.1	11.1 +- 2.2	11.1 +- 2.2	12.4 +- 2.5
30	12.0 +- 2.4	13.2 +- 2.6	13.8 +- 2.8	14.8 +- 3.0
31	11.5 +- 2.3	10.0 +- 2.0	12.2 +- 2.4	11.2 +- 2.2
Quarterly average +- s.d.	11.3 +- 0.6	11.9 +- 1.3	12.4 +- 1.0	13.3 +- 1.4

a - For the 1st quarter, the TLD and cage were found lying on the ground.

b - For the 3rd quarter, the TLD and cage were found lying on the ground.

c - For the 4th quarter, the TLD and cage were found lying on the ground.

Table 8. WI DHFS analysis results for precipitation samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements expressed as nCi/m²

Monthly Composite Sample

Collection	Inches	Gross Beta	Tritium
01/21/04	1.33	0.30 + 0.07	< 10
02/19/04	1.40	0.18 + 0.07	< 11
03/18/04	2.54	0.26 + 0.08	< 19
04/17/04	2.34	0.17 + 0.10	< 18
05/15/04	4.14	< 0.25	< 32
06/17/04	7.69	0.59 + 0.39	< 59
07/21/04	2.63	0.73 + 0.13	< 20
08/18/04	1.11	0.17 + 0.06	< 8
09/23/04	1.69	0.17 + 0.09	< 13
10/21/04	1.27	0.26 + 0.06	< 10
11/17/04	2.12	0.59 + 0.11	< 16
12/16/04	3.52	0.63 + 0.18	< 27

Table 9. WI DHFS analysis results for fish samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (wet)

WI DHFS data

Collection date	03/12/04	03/12/04	03/12/04	06/22/04	06/22/04	06/22/04
Type gamma isotopic	Brown Trout	Channel Catfish	Salmon	Lake Trout	Perch And Trout	Salmon
K-40	3700 +- 600	3100 +- 500	3300 +- 500	3500 +- 200	2860 +- 150	2560 +- 150
Mn-54	< 16	< 15	< 13	< 16	< 16	< 19
Co-58	< 15	< 14	< 14	< 17	< 16	< 20
Fe-59	< 53	< 43	< 41	< 37	< 36	< 37
Co-60	< 18	< 22	< 22	< 21	< 16	< 21
Zn-65	< 46	< 42	< 35	< 46	< 40	< 44
Nb-95	< 15	< 15	< 12	< 15	< 15	< 18
Zr-95	< 30	< 29	< 25	< 26	< 22	< 34
Cs-134	< 17	< 16	< 17	< 15	< 14	< 19
Cs-137	29 +- 13	59 +- 14	35 +- 13	54 +- 6	49 +- 6	52 +- 7
Collection date	09/16/04	09/16/04	09/16/04	12/08/04	12/08/04	12/08/04
Type gamma isotopic	Rainbow Trout	Lake Trout	Rock Bass	Lake Trout	Lake Trout	Lake Trout
K-40	2700 +- 200	2600 +- 200	2050 +- 120	3500 +- 200	3040 +- 150	2860 +- 160
Mn-54	< 25	< 22	< 20	< 12	< 12	< 12
Co-58	< 26	< 19	< 21	< 13	< 12	< 14
Fe-59	< 70	< 50	< 37	< 25	< 26	< 30
Co-60	< 31	< 25	< 25	< 14	< 12	< 16
Zn-65	< 70	< 70	< 50	< 30	< 32	< 32
Nb-95	< 28	< 24	< 20	< 11	< 12	< 13
Zr-95	< 41	< 38	< 36	< 19	< 21	< 20
Cs-134	< 24	< 22	< 19	< 13	< 11	< 14
Cs-137	< 25	< 26	29 +- 7	58 +- 6	40 +- 5	46 +- 6

Radioisotopes other than those reported were not detected.

Table 10. WI DHFS analysis results for shoreline sediment samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (dry)

WI DHFS data

Collection date	09/28/04	09/27/04	09/27/04
Site	PBK-5	PBK-10a	PBK-25
gross alpha	< 7000	< 7000	< 7000
gross beta	11000 +- 4000	9000 +- 4000	9000 +- 4000
gamma isotopic			
K-40	6500 +- 200	5020 +- 140	7100 +- 200
Mn-54	< 3	< 5	< 8
Co-58	< 3	< 6	< 7
Fe-59	< 8	< 14	< 21
Co-60	< 3	< 6	< 9
Zn-65	< 9	< 17	< 23
Nb-95	< 4	< 6	< 10
Zr-95	< 6	< 10	< 12
Cs-134	< 4	< 9	< 10
Cs-137	15 +- 1	22 +- 2	17 +- 3
Collection date	09/28/04	09/28/04	09/28/04
Site	PBK-12a	PBK-12b	PBK-12c
gross alpha	< 7000	< 7000	< 7000
gross beta	11000 +- 4000	11000 +- 4000	10000 +- 4000
gamma isotopic			
K-40	6600 +- 200	7500 +- 300	6100 +- 200
Mn-54	< 8	< 18	< 6
Co-58	< 8	< 16	< 7
Fe-59	< 18	< 46	< 16
Co-60	< 8	< 19	< 6
Zn-65	< 23	< 48	< 19
Nb-95	< 9	< 18	< 8
Zr-95	< 14	< 25	< 11
Cs-134	< 9	< 22	< 7
Cs-137	27 +- 3	23 +- 5	23 +- 2
			35 +- 5

Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Radioisotopes other than those reported were not detected.

Table 11. WI DHFS analysis results for surface water samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data	PBK-9, Point Beach meteorological tower					
Collection date	01/15/04	b	03/23/04	04/13/04	05/05/04	06/11/04
gross alpha-sol	< 2.1		< 1.9	< 1.8	< 1.5	< 1.9
gross beta-sol	< 2.4		3.0 +- 1.4	< 2.4	2.6 +- 1.6	4.0 +- 1.6
gross alpha-insol	< 1.5		< 1.3	< 1.3	< 1.1	< 1.4
gross beta-insol	< 2.3		< 2.3	< 2.5	< 2.4	< 2.4
I-131	< 0.1			< 0.1	< 0.1	< 0.1
H-3 a			< 300			< 300
Sr-89 a			< 0.6			< 1.2
Sr-90 a			< 0.3			0.5 +- 0.3
Gamma isotopic						
Mn-54	< 5		c	< 10	< 8	< 5
Co-58	< 5			< 9	< 9	< 5
Fe-59	< 14			< 21	< 19	< 9
Co-60	< 5			< 10	< 10	< 5
Zn-65	< 10			< 22	< 19	< 10
Nb-95	< 5			< 11	< 9	< 5
Zr-95	< 11			< 17	< 17	< 8
I-131	< 8			< 23	< 15	< 10
Cs-134	< 5			< 10	< 9	< 5
Cs-137	< 5			< 9	< 10	< 5
Ba-140	< 22			< 60	< 41	< 25
La-140	< 10			< 16	< 15	< 8
Collection date	07/14/04	08/11/04	09/16/04	10/13/04	11/10/04	12/08/04
gross alpha-sol	< 1.8	< 1.8	< 2.0	< 2.0	< 1.9	< 1.8
gross beta-sol	< 2.3	2.5 +- 1.5	3.0 +- 2.0	< 3.0	3.0 +- 2.0	< 3.0
gross alpha-insol	< 1.3	< 1.3	< 1.3	< 1.3	1.6 +- 1.3	< 1.2
gross beta-insol	< 2.4	< 2.4	< 2.5	< 2.5	< 2.5	< 2.5
I-131	< 0.1			< 0.2		< 0.2
H-3 a			< 300			< 300
Sr-89 a			< 0.7			< 0.4
Sr-90 a			< 0.4			< 0.5
Gamma isotopic						
Mn-54	< 6	< 7	< 9	< 4	< 10	< 4
Co-58	< 6	< 8	< 9	< 4	< 9	< 3
Fe-59	< 12	< 15	< 19	< 7	< 17	< 7
Co-60	< 6	< 8	< 9	< 4	< 10	< 4
Zn-65	< 12	< 16	< 20	< 8	< 21	< 8
Nb-95	< 6	< 8	< 9	< 4	< 9	< 4
Zr-95	< 10	< 14	< 15	< 7	< 17	< 7
I-131	< 13	< 13	< 14	< 6	< 12	< 5
Cs-134	< 6	< 8	< 10	< 4	< 10	< 4
Cs-137	< 6	< 8	< 9	< 4	< 10	< 4
Ba-140	< 33	< 35	< 44	< 17	< 40	< 15
La-140	< 10	< 14	< 16	< 7	< 12	< 5

a - Analysis is performed on a quarterly composite.

b - No data was available. Due to safety concerns a surface water sample was not collected.

c - No data was available. A gamma isotopic analysis was not performed on the sample.

Radioisotopes other than those reported were not detected.

Table 11. WI DHFS analysis results for surface water samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data	PBK-12a, Kewaunee effluent channel					
Collection date	01/05/04	02/02/04	03/01/04	04/01/04	05/03/04	06/01/04
gross alpha-sol	< 2.2	< 1.9	< 1.8	< 1.9	< 1.4	< 1.4
gross beta-sol	< 2.6	< 2.4	3.4 +- 1.4	3.7 +- 1.4	2.6 +- 1.5	3.8 +- 1.6
gross alpha-insol	< 1.3	< 1.4	< 1.3	< 1.2	< 1.0	< 1.0
gross beta-insol	< 2.4	< 2.5	< 2.5	< 2.3	< 2.4	< 2.4
I-131	< 0.3	< 0.3		< 0.4	< 0.1	< 0.3
H-3 a			< 300			< 300
Sr-89 a			< 1.0			< 1.4
Sr-90 a			0.5 +- 0.3			0.8 +- 0.3
Gamma isotopic						
Mn-54	< 7	< 7	< 4	< 8	< 8	< 9
Co-58	< 7	< 6	< 5	< 9	< 7	< 9
Fe-59	< 19	< 21	< 13	< 21	< 14	< 17
Co-60	< 8	< 7	< 5	< 8	< 8	< 9
Zn-65	< 16	< 14	< 10	< 20	< 15	< 18
Nb-95	< 7	< 6	< 4	< 9	< 8	< 9
Zr-95	< 14	< 15	< 10	< 17	< 13	< 16
I-131	< 9	< 8	< 6	< 23	< 15	< 11
Cs-134	< 8	< 8	< 5	< 9	< 8	< 9
Cs-137	< 7	< 7	< 5	< 9	< 8	< 9
Ba-140	< 28	< 23	< 18	< 52	< 40	< 37
La-140	< 13	< 13	< 9	< 18	< 12	< 14
Collection date	07/01/04	08/02/04	09/01/04	10/04/04	11/01/04	12/01/04
gross alpha-sol	< 1.8	< 1.8	< 1.7	< 2.0	< 1.7	< 1.8
gross beta-sol	< 2.3	< 2.3	< 2.3	< 3.0	3.0 +- 2.0	< 3.0
gross alpha-insol	< 1.2	< 1.3	< 1.3	< 1.5	< 1.1	< 1.1
gross beta-insol	< 2.4	< 2.4	< 2.4	< 2.5	< 2.5	< 2.5
I-131	< 0.3			< 0.4		< 0.3
H-3 a			< 300			400 +- 200
Sr-89 a			< 0.8			< 0.4
Sr-90 a			< 0.4			< 0.5
Gamma isotopic						
Mn-54	< 5	< 13	< 8	< 10	< 9	< 4
Co-58	< 5	< 11	< 8	< 9	< 9	< 4
Fe-59	< 10	< 23	< 17	< 15	< 17	< 7
Co-60	< 5	< 13	< 10	< 10	< 9	< 4
Zn-65	< 11	< 24	< 17	< 19	< 18	< 8
Nb-95	< 5	< 11	< 9	< 8	< 8	< 4
Zr-95	< 9	< 20	< 16	< 16	< 15	< 7
I-131	< 10	< 14	< 14	< 10	< 11	< 7
Cs-134	< 6	< 12	< 8	< 9	< 9	< 4
Cs-137	< 5	< 12	< 8	< 10	< 9	< 4
Ba-140	< 27	< 47	< 40	< 32	< 37	< 19
La-140	< 8	< 15	< 16	< 14	< 12	< 6

a – Analysis is performed on a quarterly composite.

Radioisotopes other than those reported were not detected.

Table 11. WI DHFS analysis results for surface water samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data	PBK-17, Green Bay Water: Rostok					
Collection date	01/19/04	02/03/04	03/01/04	04/05/04	05/03/04	06/07/04
gross alpha-sol	< 1.9	< 1.9	< 1.4	< 1.7	< 1.3	< 1.4
gross beta-sol	< 2.4	< 2.4	3.9 +- 1.6	< 2.4	4.1 +- 1.6	3.2 +- 1.6
gross alpha-insol	< 1.4	< 1.4	< 1.0	< 1.2	< 1.0	< 1.0
gross beta-insol	< 2.5	< 2.5	< 2.4	< 2.4	< 2.4	< 2.4
I-131	< 0.1	< 0.3		< 0.3	< 0.1	< 0.2
H-3 a			< 300			< 300
Sr-89 a			< 1.0			< 1.3
Sr-90 a			0.8 +- 0.3			1.1 +- 0.4
Gamma isotopic						
Mn-54	< 6	< 5	< 4	< 11	< 4	< 8
Co-58	< 6	< 5	< 4	< 12	< 5	< 8
Fe-59	< 22	< 12	< 12	< 28	< 9	< 16
Co-60	< 9	< 6	< 5	< 15	< 4	< 9
Zn-65	< 16	< 10	< 10	< 25	< 9	< 18
Nb-95	< 7	< 5	< 4	< 13	< 5	< 9
Zr-95	< 14	< 10	< 9	< 20	< 8	< 15
I-131	< 8	< 5	< 5	< 22	< 14	< 11
Cs-134	< 8	< 5	< 5	< 12	< 4	< 9
Cs-137	< 6	< 4	< 5	< 12	< 4	< 9
Ba-140	< 24	< 16	< 16	< 60	< 33	< 34
La-140	< 13	< 9	< 7	< 20	< 12	< 13
Collection date	07/12/04	08/02/04	09/13/04	10/04/04	11/02/04	12/07/04
gross alpha-sol	< 1.8	< 1.8	< 1.9	< 1.9	< 1.9	< 1.7
gross beta-sol	2.6 +- 1.6	< 2.3	< 3.0	< 3.0	< 3.0	3.0 +- 2.0
gross alpha-insol	< 1.2	< 1.2	< 1.2	< 1.2	< 1.3	< 1.2
gross beta-insol	< 2.4	< 2.4	< 2.5	< 2.5	< 2.5	< 2.5
I-131	< 0.1			< 0.4		< 0.2
H-3 a			< 300			< 300
Sr-89 a			< 0.7			< 0.4
Sr-90 a			< 0.4			< 0.6
Gamma isotopic						
Mn-54	< 5	< 10	< 9	< 9	< 9	< 5
Co-58	< 5	< 10	< 9	< 9	< 8	< 5
Fe-59	< 11	< 20	< 18	< 17	< 16	< 9
Co-60	< 6	< 10	< 10	< 10	< 9	< 6
Zn-65	< 12	< 21	< 21	< 19	< 17	< 11
Nb-95	< 6	< 9	< 9	< 8	< 8	< 5
Zr-95	< 10	< 18	< 15	< 16	< 15	< 9
I-131	< 7	< 13	< 9	< 9	< 11	< 6
Cs-134	< 6	< 10	< 10	< 9	< 9	< 5
Cs-137	< 6	< 10	< 10	< 9	< 9	< 5
Ba-140	< 22	< 40	< 34	< 32	< 36	< 20
La-140	< 8	< 11	< 12	< 12	< 11	< 6

a— Analysis is performed on a quarterly composite.

Radioisotopes other than those reported were not detected.

Table 11. WI DHFS analysis results for surface water samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data	PBK-5	PBK-25	PBK-5	PBK-25
Collection date	06/08/04	06/08/04	09/28/04	09/28/04
gross alpha-sol	< 1.5	< 1.4	< 1.9	< 2.0
gross beta-sol	4.1 +- 1.6	< 2.3	< 3.0	< 3.0
gross alpha-insol	1.5 +- 1.1	< 1.1	< 1.3	< 1.3
gross beta-insol	2.3 +- 1.5	< 2.5	< 2.5	< 2.5
H-3	< 300	< 300	800 +- 200	< 300
Sr-89	< 1.1	< 1.2	< 0.6	< 0.5
Sr-90	0.8 +- 0.3	1.0 +- 0.3	< 0.4	< 0.3
Gamma isotopic				
Mn-54	< 10	< 10	< 10	< 10
Co-58	< 10	< 10	< 9	< 10
Fe-59	< 18	< 18	< 18	< 17
Co-60	< 11	< 10	< 9	< 11
Zn-65	< 21	< 18	< 19	< 21
Nb-95	< 9	< 10	< 9	< 9
Zr-95	< 17	< 17	< 17	< 16
I-131	< 13	< 11	< 16	< 13
Cs-134	< 10	< 10	< 9	< 10
Cs-137	< 11	< 10	< 10	< 10
Ba-140	< 42	< 35	< 47	< 41
La-140	< 12	< 13	< 14	< 17

Radioisotopes other than those reported were not detected.

Table 12. WI DHFS analysis results for well water samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data	PBK-3	PBK-10	PBK-11	PBK-12d N	PBK-12d S
Collection date	06/07/04	04/13/04	06/08/04	06/08/04	06/08/04
gross alpha	< 1.8	2.2 +- 1.2	< 3.0	< 2.4	< 2.1
gross beta	< 1.6	1.6 +- 0.7	< 1.6	1.4 +- 0.8	1.8 +- 0.8
H-3	< 300	< 300	< 300	< 300	< 300
	PBK-3	PBK-10	PBK-11	PBK-12d N	PBK-12d S
Collection date	09/27/04	10/13/04	09/28/04	09/28/04	09/28/04
gross alpha	< 1.6	< 3.0	< 1.3	< 1.8	1.8 +- 0.9
gross beta	< 1.0	12.0 +- 2.0	< 1.0	< 0.9	2.2 +- 0.5
H-3	< 300	< 300	< 300	< 300	< 300

Table 13. WI DHFS analysis results for milk samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data	PBK-19, Funk farm					
Collection date	01/07/04	02/04/04	03/03/04	04/07/04	05/04/04	06/02/04
Analysis						
I-131	< 0.4	< 0.4	< 0.3	< 0.5	< 0.2	< 0.7
Sr-90	0.7 +- 0.2	0.5 +- 0.2	0.4 +- 0.2	0.5 +- 0.2	0.6 +- 0.2	0.5 +- 0.2
gamma isotopic						
K-40	1400 +- 200	1500 +- 200	1500 +- 200	1490 +- 90	1490 +- 60	1410 +- 70
Mn-54	< 7	< 6	< 8	< 14	< 10	< 12
Co-58	< 7	< 8	< 7	< 13	< 10	< 11
Fe-59	< 24	< 22	< 23	< 26	< 20	< 27
Co-60	< 10	< 9	< 9	< 15	< 10	< 13
Zn-65	< 20	< 18	< 19	< 34	< 22	< 24
Nb-95	< 7	< 7	< 7	< 13	< 9	< 11
Zr-95	< 16	< 15	< 17	< 23	< 17	< 21
I-131	< 7	< 8	< 7	< 17	< 12	< 12
Cs-134	< 9	< 8	< 8	< 13	< 10	< 12
Cs-137	< 7	< 8	< 7	< 13	< 10	< 11
Ba-140	< 24	< 27	< 25	< 53	< 39	< 43
La-140	< 10	< 11	< 10	< 17	< 12	< 15
Collection date	07/07/04	08/04/04	09/01/04	10/06/04	11/03/04	12/01/04
Analysis						
I-131	< 0.3			< 0.9		< 0.7
Sr-90	0.4 +- 0.2	0.8 +- 0.2	0.5 +- 0.2	0.8 +- 0.2	0.4 +- 0.2	0.4 +- 0.2
gamma isotopic						
K-40	1450 +- 50	1390 +- 60	1490 +- 50	1440 +- 60	1620 +- 60	1560 +- 60
Mn-54	< 5	< 8	< 8	< 10	< 8	< 7
Co-58	< 5	< 9	< 8	< 9	< 8	< 7
Fe-59	< 10	< 19	< 16	< 21	< 18	< 15
Co-60	< 5	< 9	< 9	< 11	< 9	< 8
Zn-65	< 11	< 19	< 18	< 22	< 21	< 16
Nb-95	< 5	< 7	< 8	< 9	< 8	< 7
Zr-95	< 8	< 15	< 14	< 16	< 15	< 12
I-131	< 6	< 9	< 10	< 9	< 9	< 9
Cs-134	< 5	< 8	< 8	< 10	< 9	< 8
Cs-137	< 5	< 9	< 8	< 10	< 9	< 7
Ba-140	< 20	< 31	< 32	< 34	< 31	< 28
La-140	< 6	< 10	< 9	< 11	< 11	< 8

Radioisotopes other than those reported were not detected.

Table 13. WI DHFS analysis results for milk samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data PBK-27, R. Barta farm

Collection date	01/07/04	02/04/04	03/03/04	04/07/04	05/04/04	06/02/04
Analysis						
I-131	< 0.5	< 0.4	< 0.4	< 0.5	< 0.2	< 0.6
Sr-90	0.7 +- 0.2	0.8 +- 0.2	0.8 +- 0.2	1.1 +- 0.2	0.8 +- 0.2	1.3 +- 0.2
gamma isotopic						
K-40	1600 +- 200	1500 +- 200	1400 +- 200	1330 +- 70	1490 +- 60	1510 +- 70
Mn-54	< 7	< 5	< 7	< 8	< 10	< 12
Co-58	< 7	< 5	< 7	< 9	< 9	< 12
Fe-59	< 22	< 15	< 23	< 21	< 19	< 25
Co-60	< 9	< 6	< 10	< 9	< 11	< 12
Zn-65	< 18	< 13	< 20	< 20	< 20	< 26
Nb-95	< 7	< 5	< 7	< 9	< 9	< 11
Zr-95	< 14	< 11	< 16	< 16	< 17	< 20
I-131	< 8	< 5	< 8	< 13	< 12	< 14
Cs-134	< 8	< 5	< 8	< 9	< 9	< 11
Cs-137	< 7	< 4	< 7	< 9	< 10	< 12
Ba-140	< 26	< 17	< 26	< 36	< 39	< 47
La-140	< 10	< 6	< 10	< 10	< 12	< 12
Collection date	07/07/04	08/04/04	09/01/04	10/06/04	11/03/04	12/01/04
Analysis						
I-131	< 0.3			< 0.8		< 0.7
Sr-90	1.0 +- 0.2	1.3 +- 0.2	1.0 +- 0.2	1.1 +- 0.2	0.8 +- 0.2	0.7 +- 0.2
gamma isotopic						
K-40	1440 +- 50	1490 +- 50	1410 +- 60	1500 +- 60	1410 +- 50	1340 +- 50
Mn-54	< 5	< 8	< 9	< 10	< 9	< 7
Co-58	< 6	< 8	< 8	< 10	< 8	< 7
Fe-59	< 11	< 17	< 17	< 20	< 17	< 15
Co-60	< 6	< 9	< 10	< 10	< 9	< 8
Zn-65	< 12	< 19	< 20	< 22	< 18	< 17
Nb-95	< 5	< 8	< 8	< 9	< 8	< 6
Zr-95	< 9	< 15	< 15	< 16	< 14	< 11
I-131	< 8	< 10	< 8	< 10	< 11	< 8
Cs-134	< 6	< 8	< 8	< 10	< 8	< 7
Cs-137	< 5	< 8	< 8	< 11	< 9	< 7
Ba-140	< 23	< 32	< 29	< 36	< 35	< 26
La-140	< 7	< 10	< 11	< 11	< 10	< 10

Radioisotopes other than those reported were not detected.

Table 13. WI DHFS analysis results for milk samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

WI DHFS data	PBK-24, L Struck farm					
Collection date	01/07/04	02/04/04	03/03/04	04/07/04	05/04/04	06/02/04
Analysis						
I-131	< 0.4	< 0.4	< 0.4	< 0.5	< 0.5	< 0.7
Sr-90	0.4 +- 0.2	0.5 +- 0.2	1.1 +- 0.3	0.7 +- 0.2	1.0 +- 0.2	0.6 +- 0.2
gamma isotopic						
K-40	1400 +- 200	1600 +- 200	1300 +- 200	1770 +- 100	1430 +- 60	1550 +- 60
Mn-54	< 8	< 5	< 7	< 12	< 10	< 11
Co-58	< 8	< 5	< 7	< 14	< 10	< 10
Fe-59	< 24	< 15	< 25	< 26	< 20	< 20
Co-60	< 11	< 7	< 10	< 16	< 12	< 10
Zn-65	< 20	< 13	< 18	< 29	< 22	< 21
Nb-95	< 6	< 4	< 7	< 13	< 10	< 9
Zr-95	< 16	< 11	< 16	< 23	< 16	< 17
I-131	< 7	< 5	< 8	< 17	< 10	< 12
Cs-134	< 8	< 6	< 9	< 13	< 9	< 10
Cs-137	< 7	< 5	< 7	< 14	< 10	< 10
Ba-140	< 26	< 17	< 25	< 52	< 34	< 41
La-140	< 10	< 6	< 12	< 17	< 13	< 12
Collection date	07/07/04	08/04/04	09/01/04	10/06/04	11/03/04	12/01/04
Analysis						
I-131	< 0.4			< 0.8		
Sr-90	0.4 +- 0.2	0.7 +- 0.2	0.7 +- 0.2	0.4 +- 0.2	0.4 +- 0.2	0.6 +- 0.2
gamma isotopic						
K-40	1540 +- 50	1420 +- 50	1560 +- 60	1450 +- 60	1370 +- 60	1410 +- 60
Mn-54	< 5	< 8	< 8	< 9	< 8	< 10
Co-58	< 5	< 8	< 8	< 8	< 9	< 9
Fe-59	< 11	< 18	< 16	< 18	< 17	< 19
Co-60	< 6	< 8	< 9	< 11	< 10	< 11
Zn-65	< 12	< 18	< 19	< 21	< 21	< 22
Nb-95	< 5	< 8	< 8	< 9	< 8	< 9
Zr-95	< 9	< 14	< 14	< 16	< 14	< 15
I-131	< 6	< 9	< 9	< 9	< 10	< 10
Cs-134	< 6	< 8	< 8	< 9	< 9	< 10
Cs-137	< 5	< 9	< 8	< 9	< 8	< 9
Ba-140	< 20	< 34	< 31	< 30	< 33	< 34
La-140	< 6	< 12	< 9	< 11	< 12	< 13

Radioisotopes other than those reported were not detected.

Table 14. WI DHFS analysis results for vegetation samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (wet)					
Location	PBK-1	PBK-2	PBK-3	PBK-4	PBK-5
Collection date	06/07/04	06/07/04	06/07/04	06/07/04	06/08/04
Analysis					
gross alpha	< 1800	< 1400	< 1500	< 1100	< 1500
gross beta	6900 +- 1500	5400 +- 1100	5100 +- 1200	4700 +- 900	6400 +- 1300
gamma isotopic					
Be-7	730 +- 120	730 +- 130	1100 +- 100	390 +- 100	360 +- 100
K-40	5200 +- 300	4300 +- 300	4500 +- 300	4700 +- 300	5200 +- 400
Mn-54	< 50	< 45	< 52	< 35	< 52
Co-58	< 43	< 41	< 49	< 40	< 46
Fe-59	< 100	< 100	< 120	< 90	< 120
Co-60	< 50	< 60	< 60	< 40	< 60
Zn-65	< 100	< 110	< 140	< 100	< 120
Nb-95	< 38	< 47	< 52	< 35	< 53
Zr-95	< 70	< 80	< 90	< 60	< 80
I-131	< 60	< 60	< 53	< 45	< 46
Cs-134	< 40	< 45	< 44	< 30	< 37
Cs-137	< 44	< 48	< 52	< 31	< 48
Ba-140	< 170	< 200	< 200	< 140	< 190
La-140	< 52	< 50	< 90	< 51	< 49
Location	PBK-7	PBK-8	PBK-14	PBK-17	PBK-25
Collection date	06/07/04	06/08/04	06/07/04	06/08/04	06/08/04
Analysis					
gross alpha	< 1200	< 1100	< 1800	< 1300	< 1700
gross beta	4700 +- 1000	8200 +- 1100	7100 +- 1500	6100 +- 1100	3900 +- 1300
gamma isotopic					
Be-7	700 +- 60	710 +- 110	700 +- 60	390 +- 20	520 +- 110
K-40	5300 +- 200	6000 +- 300	5200 +- 200	5480 +- 140	3900 +- 300
Mn-54	< 21	< 39	< 21	< 5	< 36
Co-58	< 21	< 39	< 20	< 8	< 57
Fe-59	< 48	< 90	< 48	< 23	< 110
Co-60	< 24	< 44	< 25	< 6	< 51
Zn-65	< 47	< 110	< 53	< 16	< 110
Nb-95	< 22	< 38	< 18	< 11	< 40
Zr-95	< 38	< 70	< 39	< 13	< 90
I-131	< 32	< 48	< 25	< 270	< 53
Cs-134	< 20	< 41	< 18	< 6	< 44
Cs-137	< 22	< 42	< 19	< 5	< 46
Ba-140	< 90	< 150	< 90	< 210	< 210
La-140	< 29	< 36	< 24	< 80	< 90

Radioisotopes other than those reported were not detected.

Table 14. WI DHFS analysis results for vegetation samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (wet)

Location	PBK-1	PBK-2	PBK-3	PBK-4	PBK-5
Collection date	09/28/04	09/27/04	09/27/04	09/27/04	09/28/04
Analysis					
gross alpha	< 3000	< 4000	< 2000	< 3000	< 2100
gross beta	5000 +- 2000	8000 +- 2000	5600 +- 1300	6000 +- 2000	6400 +- 1400
gamma isotopic					
Be-7	2600 +- 200	680 +- 150	490 +- 80	1310 +- 80	750 +- 110
K-40	3200 +- 300	6400 +- 300	5500 +- 200	5700 +- 200	5200 +- 300
Mn-54	< 60	< 52	< 31	< 26	< 44
Co-58	< 60	< 47	< 29	< 27	< 45
Fe-59	< 120	< 110	< 60	< 50	< 90
Co-60	< 60	< 50	< 34	< 27	< 44
Zn-65	< 110	< 110	< 60	< 60	< 100
Nb-95	< 60	< 60	< 29	< 25	< 40
Zr-95	< 110	< 100	< 52	< 49	< 70
I-131	< 70	< 80	< 42	< 45	< 44
Cs-134	< 53	< 50	< 28	< 24	< 35
Cs-137	< 70	< 51	< 29	< 26	< 44
Ba-140	< 250	< 230	< 130	< 130	< 160
La-140	< 80	< 70	< 40	< 35	< 60
Location	PBK-7	PBK-8	PBK-14	PBK-17	PBK-25
Collection date	09/27/04	09/28/04	09/28/04	09/28/04	09/28/04
Analysis					
gross alpha	< 4000	< 2200	< 3000	< 2500	< 3200
gross beta	8000 +- 3000	7400 +- 1500	6000 +- 2000	8000 +- 2000	4000 +- 2000
gamma isotopic					
Be-7	2290 +- 120	580 +- 90	1630 +- 90	1400 +- 100	360 +- 110
K-40	5300 +- 200	6400 +- 300	4700 +- 200	4800 +- 200	2400 +- 200
Mn-54	< 34	< 40	< 27	< 40	< 55
Co-58	< 36	< 39	< 27	< 37	< 47
Fe-59	< 70	< 100	< 60	< 90	< 100
Co-60	< 39	< 41	< 32	< 36	< 49
Zn-65	< 80	< 100	< 60	< 80	< 110
Nb-95	< 33	< 38	< 28	< 38	< 52
Zr-95	< 60	< 60	< 43	< 70	< 90
I-131	< 41	< 49	< 42	< 70	< 60
Cs-134	< 34	< 35	< 25	< 36	< 45
Cs-137	< 36	< 41	< 29	< 39	< 50
Ba-140	< 120	< 170	< 130	< 190	< 200
La-140	< 48	< 60	< 39	< 60	< 70

Radioisotopes other than those reported were not detected.

Table 15. WI DHFS analysis results for soil samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (dry)

Location	PBK-1	PBK-2	PBK-3	PBK-4	PBK-5
Collection date	06/07/04	06/07/04	06/07/04	06/07/04	06/08/04
Analysis					
gross alpha	< 5000	< 5000	6000 +- 5000	< 5000	< 5000
gross beta	21000 +- 4000	23000 +- 4000	39000 +- 5000	24000 +- 4000	26000 +- 4000
gamma isotopic					
K-40	13900 +- 400	19500 +- 600	24300 +- 700	19100 +- 600	16100 +- 500
Mn-54	< 27	< 32	< 35	< 32	< 14
Co-58	< 31	< 34	< 35	< 38	< 17
Fe-59	< 80	< 100	< 100	< 100	< 43
Co-60	< 34	< 38	< 36	< 37	< 17
Zn-65	< 80	< 100	< 100	< 90	< 44
Nb-95	< 40	< 46	< 49	< 45	< 22
Zr-95	< 60	< 70	< 70	< 60	< 33
Cs-134	< 37	< 42	< 47	< 40	< 18
Cs-137	229 +- 13	170 +- 12	48 +- 10	165 +- 12	161 +- 9
Location	PBK-7	PBK-8	PBK-14	PBK-17	PBK-25
Collection date	06/07/04	06/08/04	06/07/04	06/08/04	06/08/04
Analysis					
gross alpha	8000 +- 5000	6000 +- 5000	6000 +- 5000	< 5000	< 5000
gross beta	31000 +- 5000	31000 +- 5000	31000 +- 5000	23000 +- 4000	9000 +- 4000
gamma isotopic					
K-40	20200 +- 600	21900 +- 600	19100 +- 500	15200 +- 500	6800 +- 200
Mn-54	< 15	< 34	< 8	< 29	< 17
Co-58	< 17	< 37	< 28	< 34	< 18
Fe-59	< 44	< 100	< 220	< 90	< 51
Co-60	< 17	< 34	< 7	< 31	< 20
Zn-65	< 46	< 110	< 31	< 90	< 52
Nb-95	< 22	< 49	< 220	< 41	< 24
Zr-95	< 30	< 70	< 60	< 60	< 33
Cs-134	< 18	< 45	< 10	< 42	< 23
Cs-137	164 +- 9	261 +- 14	183 +- 6	420 +- 20	< 17

Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Radioisotopes other than those reported were not detected.

Table 15. WI DHFS analysis results for soil samples collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (dry)

Location	PBK-1	PBK-2	PBK-3	PBK-4	PBK-5
Collection date	09/28/04	09/27/04	09/27/04	09/27/04	09/28/04
Analysis					
gross alpha	< 7000	< 7000	< 7000	< 7000	< 7000
gross beta	21000 +- 5000	23000 +- 5000	30000 +- 5000	21000 +- 4000	21000 +- 4000
gamma isotopic					
K-40	14700 +- 400	16600 +- 500	23100 +- 600	19600 +- 500	15600 +- 500
Mn-54	< 21	< 15	< 26	< 16	< 12
Co-58	< 22	< 14	< 27	< 18	< 13
Fe-59	< 60	< 41	< 70	< 50	< 32
Co-60	< 25	< 15	< 27	< 20	< 14
Zn-65	< 60	< 48	< 80	< 60	< 37
Nb-95	< 27	< 20	< 32	< 22	< 15
Zr-95	< 38	< 27	< 49	< 33	< 24
Cs-134	< 27	< 20	< 35	< 26	< 14
Cs-137	281 +- 11	154 +- 9	121 +- 9	170 +- 8	205 +- 9
Location	PBK-7	PBK-8	PBK-14	PBK-17	PBK-25
Collection date	09/27/04	09/28/04	09/28/04	09/28/04	09/28/04
Analysis					
gross alpha	< 7000	< 7000	< 7000	< 7000	< 7000
gross beta	28000 +- 5000	26000 +- 5000	25000 +- 5000	18000 +- 4000	10000 +- 4000
gamma isotopic					
K-40	21200 +- 600	19500 +- 600	19400 +- 600	13400 +- 400	6600 +- 200
Mn-54	< 16	< 17	< 26	< 24	< 8
Co-58	< 16	< 15	< 26	< 23	< 9
Fe-59	< 46	< 44	< 70	< 60	< 22
Co-60	< 18	< 17	< 29	< 24	< 9
Zn-65	< 56	< 55	< 80	< 70	< 26
Nb-95	< 25	< 22	< 30	< 28	< 11
Zr-95	< 29	< 28	< 45	< 41	< 16
Cs-134	< 22	< 22	< 40	< 37	< 10
Cs-137	169 +- 10	223 +- 11	215 +- 12	399 +- 16	25 +- 3

Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Radioisotopes other than those reported were not detected.